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A Monthly Summary of Economic and Business Conditions in Texas
By the Staff of the Bureau of Business Research, The University of Texas
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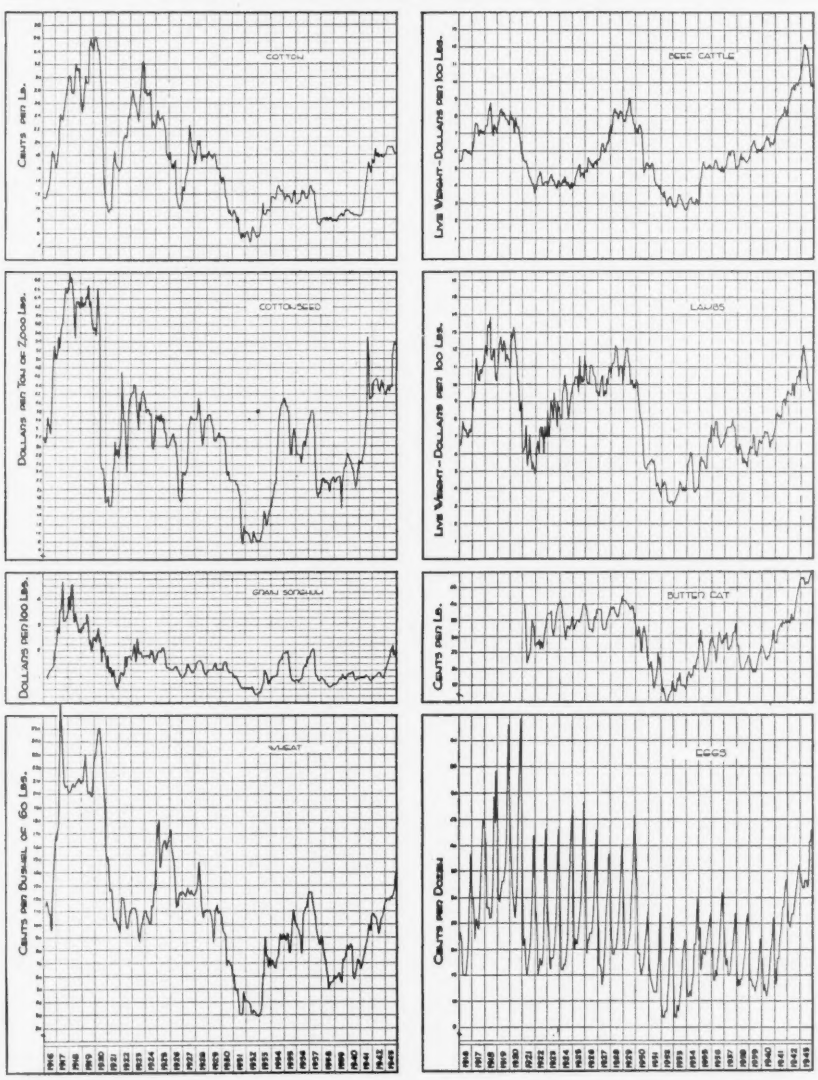
MONTHLY · FARM · PRICES OF · SELECTED · PRODUCTS · IN · TEXAS

1916 – 1943

SOURCE: U.S. DEPARTMENT OF AGRICULTURE, DIVISION OF CROPS AND LIVESTOCK, EST.



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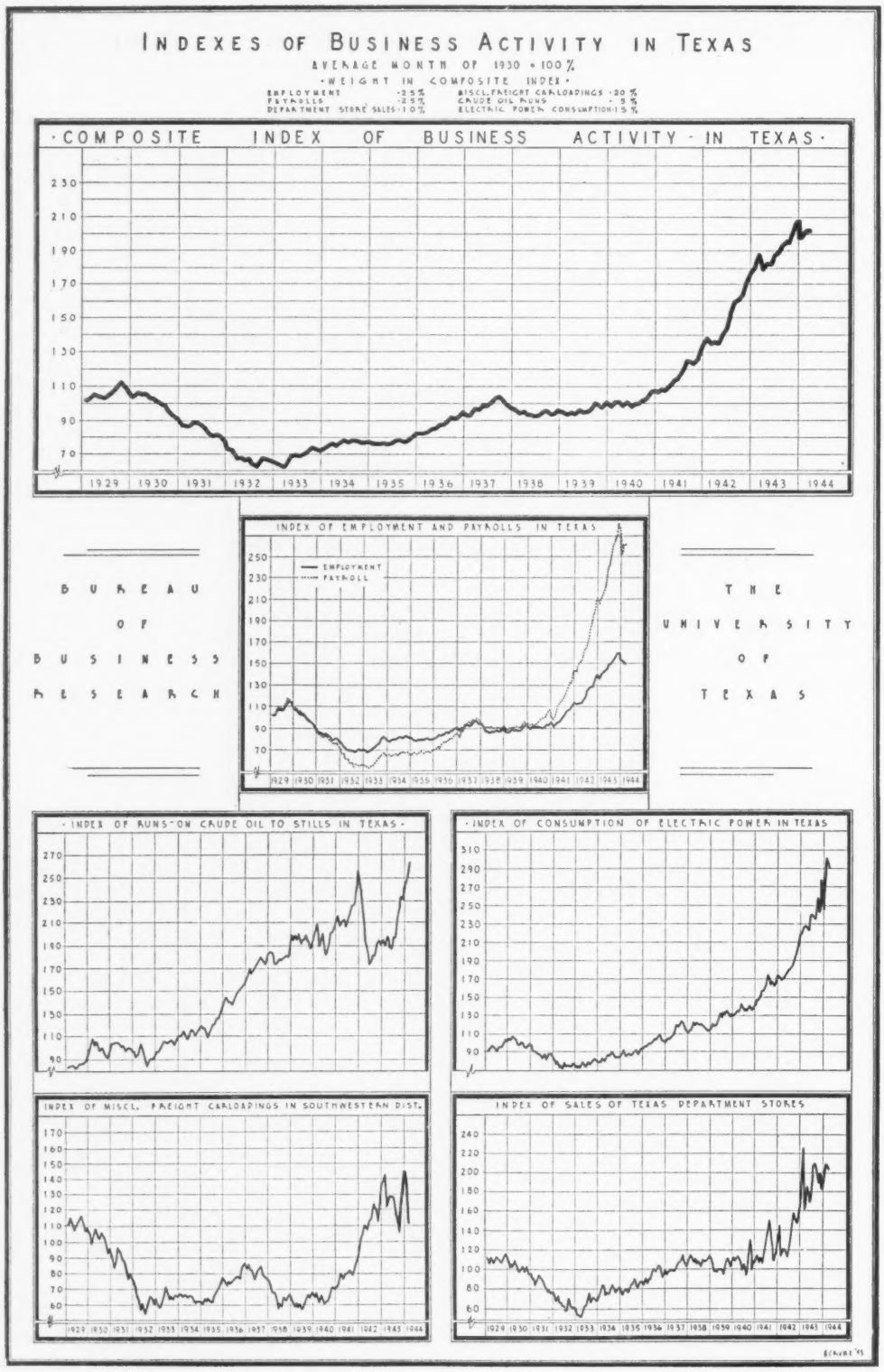
INDEXES OF BUSINESS ACTIVITY IN TEXAS
AVERAGE MONTH OF 1930 = 100%
WEIGHT IN COMPOSITE INDEX
EMPLOYMENT 25%
PAYROLLS 25%
DEPARTMENT STORE SALES 10%
MISCL. FREIGHT CARLOADINGS 20%
CRUDE OIL RUNS 5%
ELECTRIC POWER CONSUMPTION 15%
COMPOSITE INDEX OF BUSINESS ACTIVITY IN TEXAS
INDEX OF EMPLOYMENT AND PAYROLLS IN TEXAS
EMPLOYMENT
PAYROLL
BUREAU OF BUSINESS RESEARCH
THE UNIVERSITY OF TEXAS
INDEX OF RUNS ON CRUDE OIL TO STILLS IN TEXAS
INDEX OF CONSUMPTION OF ELECTRIC POWER IN TEXAS
INDEX OF MISCL. FREIGHT CARLOADINGS IN SOUTHWESTERN DIST.
INDEX OF SALES OF TEXAS DEPARTMENT STORES

Business Review and Prospect

National business periodicals are giving increasing attention to probable post-war economic trends in the South and Southwest. Commenting upon this situation *Barron's Weekly* of April 3 calls attention to "a meeting of industrialists, public officials, and others from Arkansas, Louisiana, Texas, Oklahoma, and New Mexico for the purpose of capitalizing on the momentum given manufacturing in those states by the war. The Southwest with its big raw material resources would like to process more of them near points of origin." The periodical goes on to say: "plans for post-war expansion in the Southwest and Far West are in line with previously expressed views of Assistant Census Director Hauser, who believes that numerous metropolitan centers in those areas have good to excellent chances of retaining their wartime population gains after the conflict."

In connection with the South's efforts at industrialization, Mississippi's B. A. W. I. Plan (Balance Agriculture with Industry) presented in a research publication of the Federal Reserve Bank of Atlanta, Georgia, appears upon cursory examination to be worthy of careful study by community leaders throughout the South. The publication has the ear marks of an effort at scientific appraisal of an interesting and comprehensive experiment. In conclusion the report states: "The B. A. W. I. did not bring into being any new enterprise of the independent, indigenous type. Its failure to do so is the final challenge to developmental work. The independent enterprise is generally representative of the economy of individualism that is favord in the South. A higher utilization of Southern raw and semiprocessed production is obviously the real key to a balanced economy and a higher regional income.

"What were the reasons for the failure of the B. A. W. I. to develop new industries? First, capital for investment purposes was lacking. Second, managerial ability and labor skills and experience were also lacking. And, third, the period of deep depression had suspended the fundamental economic act of risking capital funds and had paralyzed the venture spirit in enterprise.

"These limiting conditions do not confront the Southeastern region as detrimentally today as in the pre-war years. Regional funds are probably sufficient to finance a considerable amount of new local industry, if soundly applied. Labor skills and experience have very greatly increased, and there is a better supply of capable management and submanagement. Surveys of industrial resources and of regional consumer needs are being actively made, so that industrial venturing may have a factual basis upon which to proceed. Whether the enterpreneurial spirit itself will revive, and whether the business environment of the coming period will favor its revival, only the future can determine."

Can Texas glean a lesson from the experience of Mississippi? Are we giving sufficient thought to a realistic program for developing labor skills and capable management. Are there funds in sufficient volume in this region to undertake a program of industrialization on a parity with the natural resources of the region? Are technicians being turned out of our universities and colleges in sufficient numbers and of superior training? Are facts being assembled upon which to base a program?

The future course of business and industry in the country at large will be greatly influenced by governmental policy. In the March issue of THE REVIEW, special attention was called to the Baruch-Hancock report potentially significant as a forward step in helping to clear the economic outlook. Business and industrial leaders, as well as the public generally, will be vitally interested in observing the extent to which the recommendations of the report tend to influence national legislative action and administrative policy. It is understood, of course, that all recommendations and steps relating to reconversion and post-war policy are subject to the prior claims of the war needs in all phases. The course of the war will thus determine in large measure the character of governmental economic policy and the speed with which it is executed.

Among the more urgent national economic problems requiring immediate Congressional attention is the extension of the Emergency Price Control Act of 1942 which expires by limitation on June 30 of this year. A clue will thus be provided as to the likely course of commodity prices over the balance of the war period and the transition era that will follow.

Despite widespread, although often unwarranted, criticism of the Price Control Act it is certain to be extended, but with several amendments. Among probable amendments are the following: to limit O. P. A. orders designed to control profits, to broaden appeals to the courts, to restate the wage stabilization formula, and to limit or abolish consumer subsidies. Efforts also will probably be made for provisions which will lead to upward revision of a number of price ceilings. This would pave the way for a substantial rise in the price level in post-war years, when many industries will resume production on a considerably higher cost level than that which prevailed before the war and when price controls are certain to be less drastic than during the war.

Over the long term the vast expansion of national industrial productivity may be expected to bring about a lowering of the general commodity price level but an interval of uncertain duration will elapse before this factor can fully assert itself. For several years after the end of the war in Europe, therefore, conditions may favor higher prices for many products, despite the fact that wartime advances in technology will tend over the longer run to bring about a lower price level.

Another probable source of rising costs is the expected demand for higher wage rates to compensate for the loss of over-time when industry begins to slow down. If the expected further rise in prices occurs, labor leaders will most likely demand an increase in wages to prevent a lowering of the workman's standard of living.

Many other factors will be present in the immediate post-war period to exert pressure upon the price control machinery and tend to push prices up. All of the elements that constitute effective demand—the need for goods, the ability to buy, and the inclination to buy—will prevail to a marked extent. Every passing day and month adds to the potential demand for a wide range of products, especially durable consumer goods—homes, automobiles, household appliances, and the like. Vast liquid funds have been accumulating since 1940. According to the Department of Commerce individual savings in 1940 amounted to $7.5 billion, in 1941 to $13.6 billion, in 1942 to $26.9 billion, in 1943 to $36.0 billion and by the end of 1944 the accumulated individual savings of the past five years may exceed $120 billion.

As to the *inclination* to buy it has been aptly said that "the coming of peace will also produce what may be called an inflationary state of mind." This psychological factor, always important at war's end, will be even more important after World War II than it was in 1918—because of the greater amount of direct regulation which this war has made necessary. Nothing in the last war struck so direct at the habits of the people as gasoline and other rationing has struck in this war, not to mention various other controls. With the war won we may expect a violent reaction to such controls—at the very time when they are most needed. Especially does the danger of reaction to regulation apply to price control.

It is thus of great public interest that the necessary authority be vested in those who will administer the law which supersedes the present Price Control Act, that the price control system itself be simplified, and that overlapping agencies be consolidated into one efficient organization. The best insurance against inflation is, after all, the promotion of production and this can best be accomplished by the removal of unnecessary government controls and the encouragement of optimum use of the nation's industrial plant. In the post war years it will be necessary to have a high level of national income not only in money but especially in goods. To avoid future economic depression it will be necessary, moreover, that the high level of production be maintained.

Texas Business

The rate of industrial and commercial activity in Texas during March did not change materially from that which prevailed during the preceding month, but high as was the level attained a year ago, the current tempo of industry and trade in the state exceeds that of the corresponding period last year by nearly thirteen per cent. All of the factors included by the Bureau in measuring relative business activity, except miscellaneous freight car loadings, were well above a year ago.

MARCH INDEXES OF BUSINESS ACTIVITY IN TEXAS

	March, 1944	March, 1943	Feb., 1944
Employment	149.3	141.1	152.4
Pay Rolls	261.8	218.3	261.6
Miscellaneous Freight Carloadings Southwest District	111.2	121.5	112.2*
Runs of Crude Oil to Stills	263.7	198.6	247.4
Department Store Sales	204.6	160.1	209.8
Electric Power Consumption	290.3	267.4	301.0
Composite	202.2	179.2	204.4*

*Revised.

It will be noted that the indexes of employment and pay rolls, the two factors which are given greatest weight in computing the composite index, changed but little from February to March. It is expected, however, that these two indexes will show a slight advance during the months immediately ahead since peak employment has not yet been reached in a few war industries. After adjustment for seasonal changes, it is expected that the indexes of runs of crude oil to stills, department store sales and electric power consumption will point moderately upward for the next several months with only minor interruptions.

Farm Cash Income During March

Farm cash income in Texas during March fell sharply below that of the corresponding month last year and substantially below that of February. Normally there is a slight increase in farm cash income from February to March. The decline in income from $61 million in March 1943 to $50 million in March of the current year was mainly the result of a drastic slump in marketings of cattle, calves, and sheep in comparison with last year when shipments of these animals were abnormally large. Since inventories of cattle on January 1, 1944 were slightly above and of sheep only moderately below those of January 1, 1943, it is to be expected that in coming months livestock marketings will average closely to those of a year ago with possible temporary variations resulting from price or feed conditions. In addition to the sharp decline in marketings, prices of livestock during March were slightly below those of a year ago, thus contributing to the drop in cash income although the price factor was only of relatively minor importance.

Aggregate farm cash income during the first quarter of the year was $172 million compared with $170 million during the corresponding period last year.

INDEXES OF AGRICULTURAL CASH INCOME IN TEXAS

Districts	March, 1944	Feb., 1944	March, 1943	Actual Cash Income (Cumulative) in Thousands of Dollars January to April 1944	1943
1–N	131.7	174.5	359.7	12,933	24,215
1–S	738.4	491.0	806.4	20,093	19,706
2	237.7	298.8	311.6	14,886	17,141
3	232.1	263.8	241.2	6,531	6,629
4	226.3	248.4	235.4	22,761	19,171
5	231.0	261.3	204.5	7,736	6,829
6	316.7	251.7	497.5	8,107	12,038
7	161.1	265.7	208.7	6,208	7,458
8	271.2	299.3	372.2	12,029	12,088
9	294.5	358.8	206.5	19,691	16,303
10	378.6	210.2	467.3	4,549	5,786
10–A	564.3	797.7	502.7	36,908	22,603
STATE	279.3	337.9	342.3	172,432	169,967

NOTE: Farm cash income as computed by this Bureau understates actual farm cash income by from six to ten per cent. This situation results from the fact that means of securing complete local marketings, especially by truck, have not yet been fully developed. In addition, means have not yet been developed for computing cash income from all agricultural specialities of local importance in scattered areas throughout the State. This situation, however, does not impair the accuracy of the *indexes* to any appreciable extent.

Indexes of farm cash income as percentages of the average monthly income from 1928 to 1932 adjusted for seasonal variation still remain high in spite of the drop in income discussed above. Especially is this true for the Southern High Plains and the Lower Rio Grande Valley.

TRENDS IN FARM CASH INCOME IN CROP REPORTING DISTRICTS 4 AND 5

In the January, February and March issues of THE REVIEW the trend of farm cash income in Texas by crops for the period 1927 to 1943 inclusive was presented in tabular form for the state and for crop reporting Districts 1–N, 1–S, 2 and 3. In this issue similar data are presented for crop reporting Districts 4 and 5.

In spite of the fact that farm cash income for the state as a whole in 1943 was sharply above that of the best years in the late 1920's, it will be noted in the following tables that the cash income in District 4 (Black and Grand Prairies) was slightly less in 1943 than in 1927, and in District 5 (East Texas Timbered Plains) the cash income in 1943 was far below that of 1927. In both cases the decline in the income from cotton and cotton seed has not been fully compensated for by increases from other sources.

The seasonal distribution of cash income in the two districts is quite similar as will be noted in comparing their respective indexes of seasonal variation.

INDEXES OF SEASONAL VARIATION

	District 4	District 5
January	42.0	34.0
February	36.1	30.3
March	37.0	24.9
April	39.1	27.2
May	42.0	27.4
June	68.3	117.3
July	47.0	29.2
August	120.0	126.5
September	329.3	392.6
October	154.5	250.0
November	73.9	86.2
December	58.8	54.4

More than one-half of the farm cash income in District 4 is received during the months of August, September and October, and nearly two-thirds of the farm cash income in District 5 is received during these three months. These are the months in which most of the cotton is ginned in the two districts.

F. A. BUECHEL.

For tables showing trends of farm cash income by products in crop reporting districts 4 and 5 see next page.

DISTRICT 4—ANNUAL FARM CASH INCOME BY PRODUCTS ($000)

Product	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943
Cotton	126,972	134,013	116,359	59,247	48,589	38,889	55,229	49,455	41,848	63,063	58,714	38,491	38,422	40,437	46,525	59,497	66,507
Cotton Seed	19,464	23,009	19,592	12,686	7,378	5,563	7,644	11,720	11,378	14,988	12,306	8,838	7,499	9,336	14,039	14,472	16,796
Wheat	2,607	2,198	2,457	1,662	877	787	780	1,150	790	1,528	3,513	2,514	2,348	2,244	1,322	832	2,571
Grain Sorghum	307	422	117	325	133	91	214	17	158	64	13	59	108	132	194	263	390
Corn	2,703	3,562	1,361	1,385	1,226	1,036	862	568	2,010	2,153	2,090	1,786	2,052	2,970	3,294	4,429	6,753
Oats	5,126	3,138	2,177	1,319	2,366	1,079	809	1,803	1,649	1,063	1,766	951	1,129	1,325	1,581	1,556	1,053
Cattle	3,477	5,308	5,472	3,271	2,467	2,055	1,981	2,456	4,641	5,196	8,227	7,215	7,536	4,816	6,797	10,622	10,323
Calves	656	1,066	1,209	1,131	568	464	473	550	1,125	1,525	1,871	1,753	1,921	1,783	2,226	2,749	2,750
Hogs	1,350	1,770	2,275	1,522	763	448	1,017	621	1,495	3,032	3,167	3,086	2,243	1,693	3,863	6,613	8,981
Sheep	261	311	304	227	345	494	387	489	722	675	1,261	1,228	1,062	609	635	1,016	1,227
Poultry	4,574	4,735	5,328	5,288	4,782	3,075	2,590	2,720	3,334	3,025	3,971	3,278	2,796	2,759	3,150	3,335	4,238
Wool	313	507	516	389	303	144	505	438	408	789	1,041	636	753	975	1,340	2,259	2,301
Mohair	106	159	122	163	102	57	189	116	227	236	264	176	237	378	393	700	714
Eggs	6,145	7,378	7,633	6,358	5,294	3,800	1,978	5,003	6,580	6,716	6,011	5,782	5,465	6,261	18,468	32,399	33,797
Milk Products	6,553	6,778	7,983	9,229	7,495	5,707	6,024	6,203	7,872	9,142	9,168	8,861	8,027	9,136	11,962	19,636	25,990
Fruits, vegetables Canning	706	699	666	595	650	928	467	1,540	1,646	1,893	1,294	1,555	290	1,643	1,262	.....	1,131
Peanuts	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,324	2,839
Total	181,320	195,058	173,571	104,797	83,338	64,617	81,149	84,849	85,883	115,088	114,677	86,209	81,888	86,497	117,051	162,702	188,361

DISTRICT 5—ANNUAL FARM CASH INCOME BY PRODUCTS

Product	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943
Cotton	83,122	86,124	62,515	32,478	24,261	20,929	26,420	27,308	25,222	28,590	29,495	19,249	21,645	22,533	17,185	24,730	31,061
Cotton Seed	12,656	14,584	10,782	7,326	3,436	2,885	3,447	6,802	6,829	7,025	6,473	4,466	4,334	5,016	4,831	5,939	7,767
Grain Sorghum	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	13	19	24	34	41
Corn	2,869	1,620	537	842	890	705	582	483	879	1,815	1,175	671	241	739	1,314	1,771	2,564
Oats	396	98	107	68	78	68	56	69	60	46	77	68	106	128	159	119	116
Cattle	3,656	5,167	3,749	1,484	766	615	474	837	2,896	2,356	3,423	2,815	2,676	1,696	2,179	4,169	4,035
Calves	389	633	552	331	185	204	122	179	510	625	866	686	798	936	1,331	1,917	2,150
Hogs	1,149	457	870	1,235	420	87	132	70	384	839	687	684	559	642	1,307	2,355	3,570
Sheep	17	20	17	7	2	4	3	4	10	14	28	27	24	81	91	196	307
Poultry	900	946	1,209	943	826	679	483	621	789	730	709	772	713	534	485	729	1,742
Wool	46	63	55	27	25	14	61	96	39	57	72	31	34	64	97	156	179
Mohair	72	107	84	8	36	11	81	23	45	83	76	59	82	118	121	59	60
Eggs	1,927	2,192	2,535	2,246	1,623	601	1,471	1,933	2,589	2,585	1,103	2,404	2,324	1,585	2,116	2,712	4,887
Milk Products	1,549	1,602	1,884	2,136	1,837	1,376	1,332	1,525	1,758	1,887	2,019	2,078	2,089	2,297	2,889	5,301	8,971
Fruits, vegetables Canning	3,244	2,932	4,349	4,046	2,955	1,940	2,734	1,849	2,226	1,868	1,671	1,771	2,104	2,911	2,571	6,229	12,806
Peanuts	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,989	6,018
Total	111,992	116,545	89,245	53,177	37,340	30,118	37,398	41,799	44,236	48,520	47,874	35,787	37,742	39,299	36,700	61,405	86,274

Chemical Plants in Texas

The following article deals factually with chemical plants in Texas together with plants that yield chemicals as by-products or which consume chemicals, or both. Lack of space precludes any considerable discussion and the matter of interpretation is omitted altogether. The chemical plants are first presented in outline form by location of the plants. Plants which consume chemicals and which also are dependent upon natural gas as an industrial fuel are next outlined. Petroleum refining plants are then discussed, with particular reference to their production of 100-octane aviation fuel, followed by an outline of synthetic rubber plants which in turn are largely dependent upon modernized petroleum refinery products.

Corpus Christi

The original ammonia-soda process plant of Southern Alkali Corporation at Corpus Christi which was built at an initial cost of about $7,500,000 began operations in October, 1934. This plant produces soda ash and caustic soda. An electrolytic chlorine unit, reported to have cost approximately $2 million was added in 1938. In the latter unit chlorine and caustic soda are produced.

Factors considered in the location of alkali plants include the following:

1. In the case of an ammonia-soda plant, adequate supplies of salt, or brine, limestone, fuel and power must be readily available in the immediate vicinity of the plant; moreover, the raw materials must be of low cost and of good quality. In the case of the Gulf Coast, brines are readily available; lime can be secured from oyster shells by dredging operations, and natural gas exists in large quantities in nearby fields. Adequate transportation is provided by railroads, and by deep-water shipping facilities. Proximity to the consuming markets is, of course, an important factor.

2. In the case of electrolytic chlorine-alkali plants, low-cost electric power is more important than in the case of ammonia-soda plants. Therefore, as a rule, these electrolytic plants are located near a source of adequate hydroelectric power or a source of low-cost fuel.

A catalyst manufacturing plant, the estimated cost of which was initially placed at $500,000, has been built at Corpus Christi. It was announced in January, 1944, that Defense Plant Corporation has increased its contract with American Cyanamid and Chemical Corporation, New York, "at $190,000," to provide additional equipment for a plant in Nueces County. In March, 1944, it was announced that Chemical Construction Company of New York had received a contract for a 50 per cent addition to a plant of American Cyanamid and Chemical Corporation at Corpus Christi—Defense Plant Corporation being the owner.

Bishop

Celanese Corporation of America will build a $5 million plant at Bishop which will make acetic acid, acetic anhydride, and acetone, as well as methanol (synthetic wood alcohol) and formaldehyde. This development will strengthen Celanese Corporation's position in providing its own raw materials for cellulose acetate production and at the same time will also permit diversified long-range expansion into the plastics field through its Celluloid Division; the latter is now making the company's regular cellulose acetate plastics and in addition it is making the newer ethyl cellulose plastics.

Types of processes to be used in this plant have not been announced. In this regard, it may be noted that the Cities Service Oil Company has for several years operated at Tallant, Oklahoma, a commercial plant utilizing natural gas as a raw material for the manufacture of several chemicals by controlled oxidation. This plant produces large quantities of methanol and formaldehyde as well as other chemicals in smaller quantities such as acetaldehyde and acetone.

Freeport

The total amount of invested capital in Dow Chemical Company's plants in the Freeport area is probably in excess of $150 million.

Magnesium. Magnesium metal is produced electrolytically from the magnesium chloride in sea water or from brines containing magnesium chloride. The water is subjected to a number of processes in order to extract and concentrate the magnesium chloride, which is the raw material for the electrolytic cells in which metallic magnesium is produced. Chlorine is also produced in the electrolytic process of making metallic magnesium, and this chlorine is used in plant operations.

Dow's original installations at Freeport are said to have cost around $12 million. Dow had purchased an 800-acre tract, with 3 miles of frontage on the Gulf, at Freeport. This sea water site not only had ample raw materials, but it could be provided with cheap power and it had an abundant supply of both limestone (oyster shells) and salt. The first magnesium unit, with a capacity of 12 million pounds annually, and with facilities for handling 300,000,000 gallons of water daily, was completed at the close of 1940.

The second magnesium unit, costing around $8 million and with an annual capacity of 18,000,000 pounds annually, was nearing completion at the close of 1941. This second plant was built at the request of Defense Plant Corporation.

In October, 1941, an additional 72 million pound plant capacity was authorized at a cost of $52 million; this plant was built at Velasco, near Freeport. Expenditures for magnesium production at Freeport at that time were stated to have totalled around $76 million. This latter plant is owned by Defense Plant Corporation, and is operated by Dow. The first bar of metallic magnesium was poured January 21, 1941. During the next three years more than 100,000,000 pounds of metallic magnesium were produced at Freeport.

In April, 1941, it was announced that Defense Plant Corporation had authorized an $8 million magnesium alloys plant at Freeport, to be operated by Dow.

Dow has an auxiliary chlorine-caustic soda plant at Freeport, using brine from wells, in which caustic soda, together with chlorine and hydrogen are produced electrolytically. Chlorine is produced for their own needs, an example of a consumer-producer operation.

Hydrocarbons. Ethylene, di-ethylene, and propylene glycols are being produced by Dow at Freeport. Dow also has a carbon tetrachloride plant at Freeport.

In August, 1941, announcement was made that Dow would build an $11 million synthetic ammonia plant at Clute, some 6 miles from Freeport. This plant was built on a 4,500 acre tract.

In July, 1942, it was reported that an $18 million styrene plant would be built at Velasco, near Freeport. This plant is to have an annual capacity of 50,000 tons. The first tank shipment of styrene from Velasco was made in September, 1943.

Bromine. Bromine production in the United States in 1924 amounted to approximately 2 million pounds: in 1931 this amount had been increased to around 9 million pounds—practically all of which is extracted from sea water.

The rapid rate of increase thus indicated was due to the accelerated demand for bromine used in the making of ethylene dibromide, the latter used in conjunction with tetraethyl lead in treating motor fuel for automobiles.

Some years ago it became apparent, in the light of this growing demand, that the ordinary sources of bromine would be inadequate and that new sources would have to be found. Although the bromine content of sea water is less than 70 parts per million—or approximately a half pound per 1,000 gallons of sea water—yet the sea contains what to all intents and purposes are inexhaustible quantities of this material. The problem then of producing bromine became the chemical and engineering means of extracting this non-metallic element from its dilute solution in sea water.

The Dow process for extracting bromine from sea water basically includes the following procedure, as outlined by Stewart in the "Annual Report of the Smithsonian Institution" for 1934:

(a) "oxidizing a natural bromide-containing brine with chlorine to liberate the bromine.
(b) "blowing the free bromine out of solution with air, and
(c) "absorbing the bromine from the air with an alkali carbonate solution from which it subsequently can be recovered in a commercially desirable form.

"Through many years of experience and effort, the Dow process has been developed to the point where it is possible to recover, consistently, 95 per cent of the bromine content of the natural brines."

In 1938 the Ethyl-Dow plant which had been established at Kure Beach, Wilmington, North Carolina, produced 1,343,000 gallons of ethylene dibromide. The new plant at Freeport, Texas, which will take bromine from Gulf waters, is probably of larger capacity than the one at Kure Beach.

The ethylene may be produced by catalytic dehydration of ethyl alcohol or from olefinic gases: these latter materials may be supplied either from petroleum refineries or from natural gas.

Ethylene dibromide is mixed with tetraethyl lead in making compounds for anti-knock motor fuel. The demands for bromine expanded proportionately with rapidly increasing requirements for high-octane gasoline. Bromine production in the United States for 1940 was about 50,000,000 pounds. Dow announced in February, 1944, that the Ethyl Dow Chemical Company's Freeport plant would be increased approximately 180 per cent of its present size with the proposed construction of a new addition to the plant.

Houston

Nyotex Chemicals, Inc. (composed of several chemical companies including Consolidated Chemicals Industries, Inc.) was reported in August, 1942, to be planning a $3 million chemical plant on a 32-acre site near Houston. Earlier, Nyotex Chemicals, Inc., had acquired the plant of Pioneer Lime Co. and a 5-acre site on Green's Bayou.

In March, 1943, it was reported that Consolidated Chemical Industries, Inc., was starting work on a new $1 million unit at its Houston (Manchester) plant. At the same time, it was reported that a new unit of Air Reduction Sales Company at Houston to cost $500,000 for the manufacture of oxygen would practically double the output of this plant.

Early in March, 1944, Southern Acid and Sulphur Company, Inc., of St. Louis, Missouri, announced that a $3,300,000 superphosphate fertilizer plant would be constructed at Houston.

Coke oven by-products are being produced at the plant of the Sheffield Steel Company on the Ship Channel, as well as at the Lone Star Steel Company's plant at Daingerfield.

Toluene. Shell operates two toluene plants at its Deer Creek refinery: the two plants represent an investment of $1 million, according to the latest reports, but which were made more than a year ago. The combined capacity of the two plants was placed at 4,000,000 gallons of toluene annually.

Toluene will be extracted from hydroformer gasoline by the Pan-American Refining Corporation at its Texas City plant, according to a report of February, 1942.

Humble Oil and Refining Company's toluene unit, completed in October, 1941, had a total cost of $11,857,000.

Frank A. Howard summarized the toluene production situation as follows in *Chemical and Engineering News*, January 25, 1944:

"Toluene is normally produced as a by-product of coal-tar distillation, and the maximum production in the United States by this process would be about 40,000,000 gallons per annum, which would have to suffice for all purposes, including TNT manufacture. Although there are many other high explosives suitable for special uses, TNT remains the basic high explosive of modern warfare, and the demand for it by the Allied Governments has pyramided at such a rate that the original coal-tar supplies would have met only a fraction of the requirement. This same situation had just begun to threaten the Allies during the last war, and at that time a small amount of toluene was extracted from some highly aromatic natural naphtha, and an effort was made to

produce more toluene from petroleum by high temperature cracking. The supply of these natural naphthas is very small, and as to the cracking operation, the yield was so small, the consumption of oil so enormous, and the problems of purification so difficult, that it was abandoned as a practical possibility in the renewed consideration of the problem when the Ordnance Department of the U.S. Army brought it to us in 1938. We undertook, however, to produce toluene from petroleum by a true synthesis operation, in which high yields of high purity product could be made without degradation of any important quantities of petroleum. This process was perfected and incorporated in a plant, built by the Humble Oil and Refining Company at Baytown, Texas, for the Ordnance Department in 1941. This plant and its prototypes built by other refiners have supplied raw material for most of the high explosives used by the Allied Governments during this war."

Magnolia Petroleum Company is producing from 300 to 400 barrels of toluene daily at its Beaumont refinery. This toluene is made as a by-product of thermal cracking in manufacturing motor fuel. It will be used for making TNT as well as a blending agent in aviation fuel. It is produced by the azeotropic distillation process developed in the laboratories of Socony-Vacuum Oil Company, Inc.

Toluene is now being diverted into the production of 100-octane gasoline, being used as a blending agent.

Texas City

The over-all commitments of Defense Plant Corporation to Monsanto Chemical Company at Texas City amounted to $15 million in February, 1943. Monsanto had then just received an additional $2 million for additional plant facilities at Texas City.

Monsanto has built and is operating at Texas City a styrene plant of 50,000 tons annual capacity. Styrene is made by dehydrogenating ethyl benzene. Ethyl benzene is produced by alkylation of ethylene gas and benzene. The Texas City plant will produce ethylene by the cracking of propane, a petroleum fraction.

It was reported, November 1942, that Monsanto had an acetylene plant under construction at Texas City, the capacity of which was to be 150,000 pounds of acetylene per day.

It was announced in November, 1943, that a one million dollar formaldehyde plant was to be built at Texas City to supply this product which is an important raw material in the plastics industry. The statement has been made that Monsanto is planning a large plastics plant in the area, an undertaking that will require an investment of some $25 million.

Carbide and Carbon Chemicals Corporation, a subsidiary of Union Carbide & Carbon Corporation has a plant at Texas City, which cost at least $15 million; this plant makes a variety of synthetic organic chemicals from refinery gases, the latter being obtained from the new and "modern" refinery of the Pan American Refining Corporation at Texas City.

Construction was begun on the Carbide and Carbon Chemicals Corporation's chemical plant at Texas City on June 1, 1940. This plant was to have begun operations early in the summer of 1941. An enlargement of the plant was reported in July, 1941.

It has been reported that among other things this Texas City plant is producing acetone. This means that it therefore is producing the series of intermediates leading up to the production of acetone. It has also been reported that Humble Oil and Refining Company is producing alcohol at its Baytown refinery.

La Porte

In March, 1944, it was announced that E. I. du Pont de Nemours and Company had purchased an 822-acre tract which lies a mile and a half north of La Porte. Construction was scheduled to begin immediately. Little information is as yet available as to what will be produced here, although it is reported that one of the first production units will be devoted to the manufacture of phenothiazine. A company official has pointed out that the planned development at La Porte comprises a diversified and gradually expanding industrial undertaking of a permanent nature and one which will become an integral part of the economic life of that region.

This plant is to be operated by the Grasseli Chemical Division of du Pont.

Austin

International Minerals & Chemical Corporation has built and is operating for the government a magnesium plant at Austin. The total cost of this enterprise, including the mining of dolomite in the Llano district or otherwise obtaining the raw materials, such as the facilities for gettting magnesium chloride at Carlsbad, New Mexico, has been estimated at approximately $20 million.

Fort Worth

At Fort Worth, a plant for manufacturing a "liquid" catalyst used in making high octane aviation gasoline will be operated by American Cyanamid and Chemical Corporations, a subsidiary of American Cyanamid Company. It was announced in January, 1944, that Defense Plant Corporation had granted a total of about $3,600,000 to American Cyanamid and Chemical Corporation of New York which was to include additional facilities at the Tarrant County plant.

Armour and Company in July, 1943, let a contract for a $123,500 serum albumen plant.

In connection with the growing industry of catalyst manufacture, it may be noted that the Tulsa Chemical Company was incorporated July 1, 1943, to manufacture anhydrous hydrofluoric acid—a catalyst used in producing high-octane aviation gasoline. A plant to produce this product is being built at Tulsa and it was expected to begin operation during October, 1943.

Etter (North of Amarillo)

What was to have been an anhydrous ammonia plant, using natural gas as a raw material, and constructed by the Chemical Construction Company at a reported cost of $25 million was, when about 85 per cent completed, converted to the production of ingredients for making

aviation gasoline. The plant is now being operated by Shell Chemical Company.

Borger

Hycar Chemical Company (a jointly owned affiliate of Phillips Petroleum and The B. F. Goodrich Rubber Company) will operate a 45,000 ton butadiene plant, the estimated cost of which was placed at nearly $31 million, as well as a copolymer plant of the same capacity at Borger.

Marshall

The Darco plant at Marshall makes Darco, an activated carbon, from lignite. The plant was established in 1922, involving an initial expenditure of about $1 million.

Dallas

In 1941, Diamond Alkali Company built a plant on a Dallas site for the production of sodium silicate and other silicate products. Sodium silicate is made from silica and soda ash.

In 1940 Procter and Gamble announced that a million dollar soap plant would be built at Dallas. The soap industry is a large consumer of raw materials as well as of certain chemicals, such as caustic soda. A by-product of soap making is glycerin, which is now a strategic material. This company has operated a "Crisco" plant at Dallas since the middle 1920's.

Natural Gas as an Industrial Fuel

Smelting and Refining. The antimony smelter of the Texas Mining and Smelting Company at Laredo smelts antimony ores from Mexico. It uses both coal and natural gas.

At El Paso the Nichols refinery, producing refined electrolytic copper from blister copper provided by Arizona smelters, began operations in January, 1940. In July, 1942 it was announced that a plant expansion to cost $2,650,000 would be inaugurated.

The large custom smelter of American Smelting and Refining Company at El Paso treats a variety of ores—gold, silver, lead, and copper—from numerous sources. The original plant of the El Paso Smelting Works was built about 1883 to treat ores from the Santa Eulalia mining district of Chihuahua, Mexico, as well as ores from other areas in Chihuahua and Sonora. The plant was later enlarged and in 1889 was acquired by American Smelting and Refining Company.

Late in 1940 American Smelting and Refining Company expanded its facilities at Amarillo, involving an expenditure of about $500,000. The capacity of the plant was to be increased from 2,800 tons to 4,600 tons of spelter monthly.

American Zinc Company of Illinois was at the same time expanding its capacity at Dumas, at a cost of some $350,000. The Dumas plant, which began operations in 1936, used zinc concentrate ores from New Mexico. Late in 1941 this plant began the production of cadmium. Cadmium-bearing dust is collected through the use of a Cottrell precipitator. The rate of mettallic cadimum production will range from 10,000 to 15,000 pounds a month.

The $5,200,000 electrolytic zinc refining plant near Corpus Christi, built by American Smelting and Refining Company, was in operation early in 1943. In addition to electrolytic zinc, the plant was scheduled to produce some 15,000 pounds of cadmium monthly as a by-product.

The tin smelter at Texas City, of the Tin Processing Corporation, went into operation on April 5, 1942. The smelter was financed by Defense Plant Corporation (a subsidiary of the RFC). The initial cost was placed at $3,500,000. This has since been revised upward to $6,500,000.

It is reported that this plant is being operated on a cost-plus basis by the Dutch firm of N. V. Billiton Mattschapij—owners of tin mines on the Island of Billiton in the Dutch East Indies and formerly operators of a tin smelter at Arnheim, Holland. This smelter will treat Bolivian tin concentrates.

The initial capacity of the smelter was set at 18,000 tons of tin annually (requiring between 40,000 and 50,000 tons of Bolivian ore)—which would supply about 20 per cent of the normal requirements of the United States.

Early in 1942 it was announced that the plant's capacity would be increased to 30,000 tons of metallic tin annually. It was announced in January, 1944 that Defense Plant Corporation had granted funds to provide additional equipment for the plant to cost $350,000.

Glass. The production of glass is not a chemical industry but it is a large consumer of certain chemicals.

Libby-Owens-Ford Glass Company has a large sheet glass plant at Shreveport. This company is the nation's largest producer of plate glass as well as of ordinary window glass.

The container glass plant of Ball Brothers at Wichita Falls has been operating for years, as has the plant of Wichita Falls Window Glass Company.

The Knox Glass Bottle Company built a $200,000 plant at Palestine in 1942. This plant increased its capacity in 1943.

In January, 1944, the new million dollar glass plant of Owens-Illinois Glass Company began operating in Waco. The initial production was reported as being 300,000 bottles daily. The products are used for packaging foods, medicinals, and chemicals. This plant is built on a 52-acre site and plans are said to have been made for doubling the capacity.

Aluminum. Neither alumina nor aluminum are manufactured in Texas.

The Aluminum Company of America built a $15 million alumina plant at Baton Rouge in 1942. Operations in Arkansas, consisting of bauxitte production and projects for alumina and aluminum manufacture have been curtailed recently.

It should be pointed out that bauxite and aluminum chloride are important as catalysts and catalyst carriers in isomerization and in catalytic alkylation.

Pulp and Paper Plants

Pulp and paper plants are not exactly chemical plants but they are very closely associated with chemical production. Furthermore, they are large consumers of

chemicals. Pulp and paper plants in Texas are absolutely dependent upon natural gas as a fuel for their operations.

The Champion Paper and Fibre Company has a large pulp and paper plant at Pasadena on the Houston Ship Channel, the total investment in which was estimated at $10 million in 1941. This concern operates one or two auxiliary chemical plants of its own, producing chlorine, for its own bleaching operations, as well as caustic soda and hydrogen as by-products. The chlorine unit affords another example of what are designated as consumer-producer operations.

The first unit of this original plant began operations in 1937; this first unit cost $3 million. It produced 200 tons daily of bleached sulphate pulp from Southern woods. In June, 1940, the new $3,500,000 paper mill began operations. This paper mill, producing fine papers, had a production of 100 tons daily.

Southland Paper Mills, Inc., at Lufkin which formerly had a $7 million dollar investment has recently added a $3,500,000 chemical pulp plant which was in operation January 15, 1944. Southland Paper Mills, Inc. began operating in January, 1940; it operated for four years as a ground wood pulp plant and newsprint producer. It formerly obtained its chemical pulp—partially bleached sulphate pulp—from the Champion Paper and Fiber Company at Pasadena. This $10,500,000 plant at Lufkin now makes newsprint entirely from its own products.

The mill has a capacity of 175 tons daily of newsprint, all of which is taken by newspaper publishers in the South and Southwest. It is planned to double the capacity of this plant at the close of the war.

The plant of the Orange Pulp and Paper Mills, Inc., makes a high grade wrapping paper and Kraft bags. It was at the Orange, Texas, plant that Edward H. Mayo in the summer in 1911 achieved the distinction, so far as is known, of being first to make sulphate pulp from Southern or Yellow pines.

In regard to sulphite pulp made from Southern pines, Union Bag and Paper Company was producing sulphite pulp in 1943 at its Savannah, Georgia plant, and for some time Rayonnier Inc. has been producing bleached sulphite pulp at its Jacksonville, Florida plant.

Salt Cake on the High Plains

Salt cake is one of the chemicals required in the making of Kraft pulp; from 200 to 250 tons of salt cake are used per ton of pulp processed.

In the southern High Plains of Texas occur natural brines which are high in sodium sulphate. Glauber's salt is produced from these brines by chilling them in a continuous process. The product is then dewatered to yield salt cake, or sodium sulphate.

Ozark Chemical Company of Tulsa, using brines as the raw material, operates a salt cake or sodium sulphate plant some 10 miles south of Monahans, Ward County.

Arizona Chemical Company, a subsidiary of American Cyanamid Company, operates two salt cake plants: one near O'Donnell, Lynn County, the other near Brownfield, Terry County. These two plants began operations in 1938.

Matthieson Alkali Works is producing synthetic salt cake at its Lake Charles, Louisiana, plant.

Oil Rrfining Expansion

In 1940 there were 45 oil refineries in the Gulf Coast portion of Texas and Louisiana and these processed about 30 per cent of the crude oil refined in the United States. The Texas Gulf Coast had 30 of these refineries and they accounted for 25 per cent of the total refinery capacity of the United States. In 1920 some 224,000 barrels of crude oil were processed daily in the Gulf Coast refineries; in 1940 the figure had risen to more than a million barrels.

The main Gulf Coast refinery districts:

1. The Baton Rouge-New Orleans district.
2. The Beaumont-Port Arthur-Lake Charles district.
3. The Houston Ship Channel-Texas City district.
4. The Corpus Christi district.

Annual expenditures for modernization of refineries in the Gulf Coast region in the late 1930's were estimated at between $15 million and $20 million.

It was estimated that expenditures for expansions and additions of Gulf Coast refineries aggregated $100 million during 1941.

Recent developments. The demand for high-octane aviation fuel, as well as for the components for butadiene, have produced a veritable revolution in petroleum refining operations. According to Ralph Davies of P.A.W., some $760 million have been invested in production facilities for 100-octane fuel alone; and according to Davies about 82 per cent of this sum, or $550 million, has been furnished by the oil companies and the rest by Defense Plant Corporation.

Perhaps a brief summary of 100-octane gasoline developments is in order, to present a general perspective of the situation, especially as regards its rapid growth.

In 1937 there were only 2 refineries in the United States producing 100-octane aviation fuel and their combined output was but 800 barrels daily. As summarized in "A Handbook on 100 Octane Number Aviation Fuel" released by the Petroleum Administration for War in November, 1943: "By 1940 production had increased to 30,000 barrels a day, and by January 1, 1942, production capacity was 46,000 barrels a day, with 22 refineries making 100 octane gasoline or some major ingredient. Today, 161 refineries are contributing to the production of 100 octane and this number will be increased in 1944. Exact figures can no longer be released, but it can be revealed that present production is more than four times what it was in January, 1942, and in four months will be eight times greater."

Three elements comprise 100-octane aviation fuel: base stock, blending agents, and tetraethyl lead.

At the beginning of 1942 there were 14 plants in the United States producing motor gasoline, of around 80 octane rating, by catalytic cracking. By alteration, these plants could be converted to yield aviation base stock. Polymerization plants were in operation which produced polymer, used as a blending agent for motor gasoline. These polymer plants were converted to the production of codimer, which could be hydrogenated to yield hydrocodimer, a powerful blending agent for aviation fuel.

At the end of 1943 codimer was being produced in large amounts in 72 plants, from which, it was shipped to two other plants to be hydrogenated. These developments comprised a part of what was called the "Quick 100-Octane Gasoline Program."

By the fall of 1943, however, new facilities of the 1942–43 aviation fuel program were getting into operation and during 1944 the program will be virtually complete. These achievements were built on a long series of research accomplishments.

In the later 1920's Graham Edgar had found that iso-octane, a component of petroleum, would not knock in the highest compression motor it was then possible to build. This established the value of iso-octane as a blending agent—but iso-octane was a rare substance. Synthetic iso-octane was made by Dr. Edgar by hydrogenating di-isobutylene—but its cost was around $30 a gallon. Hydrogenation continued, however, until 1938 as the main process for making blending agents for 100-octane gasoline.

Since 1938 alkylation has become the chief means of producing blending agents. By alkylation, blending agents similar to pure iso-octane can be produced in much larger quantities; the number of steps is reduced, and the costly process of hydrogenation is obviated altogether. It may be noted that C. R. Wagner has called alkylation the greatest development in organic chemistry in our time.

The production of tetraethyl lead had been solved and in the late 1930's the problem of producing a higher octane base stock, and in larger quantities through overcoming the limiting factor of being dependent on selected crudes, was being solved through the development of catalytic cracking. The first catalytic "process," developed by Eugene Houdry, was put into practice in 1936. This was soon followed by the "fluid" catalytic cracking process of Standard Oil of New Jersey, and a little later by the Thermofor process of Socony-Vacuum. All of these processes had been developed for the production of an improved motor gasoline.

Catalytic cracking has now become the keystone not only of 100-octane production but also of butadiene from petroleum sources. Catalytic cracking not only yields high-grade aviation base stock without being limited by having to use selected crudes but it also supplies gases which are required in large quantities, as feed stock for alkylation, the latter yielding high-grade blending agents in quantity.

In addition, several refineries which supply 100-octane aviation fuel also supply raw materials for the synthetic rubber program. These supply the butadiene that comes from petroleum as well as all the raw materials for Butyl rubber.

Lake Charles

By no means are the large new industries that have recently come to the Gulf Southwest confined to Texas. The great Gulf Coast arc, so important in this recent phase of industrialization, extends from the lower Mississippi River to the Corpus Christi area. A recent report states that approximately $200 million have been expended on the Calcasieu Ship Channel of Louisiana alone for oil refining, chemical manufacturing, and associated industries.

Continental Oil Company completed its new modern $4 million refinery at Lake Charles early in 1944. The new Cities Service refinery, built near Lake Charles, which will process 70,000 barrels of crude oil daily, in partial operation in March, 1944, will soon be operating at full capacity. A fluid catalytic cracking unit was placed in production in February, 1944, and two others were scheduled to follow in the spring of 1944. This plant, built on a 600-acre site, will be one of the largest producers of 100-octane aviation gasoline in the world.

The fluid type of cracking is used. A sulphuric acid alkylation unit was placed in production March, 1944, and two others are to follow in the spring of 1944. There is to be a butane isomerization unit as well as a propane de-asphalting unit, the former being scheduled for operation in the spring of 1944.

This refinery will also provide feedstock for one of the largest of the Government-owned butadiene plants, which is built immediately adjacent to the refinery, and which will be operated by a Cities Service subsidiary.

It is reported in April, 1944, that Petroleum Chemicals, Inc., will construct at the site of the Continental Oil Refinery at Lake Charles a $9 million plant to produce industrial alcohol from waste refinery gases. This plant is to have a designed capacity of 12,000,000 gallons annually.

The 60,000-ton copolymerization plant of Firestone Tire and Rubber Company at Lake Charles, is similar to the one at Baton Rouge. This plant began operating in September, 1943.

Other Louisiana refining developments include the Premier Refining Company's alkylation unit completed in February, 1944, and a dehydrogenation unit completed in March, 1944, at Cotton Valley.

Standard Oil Company at Baton Rouge completed an alkylation unit in February, 1943; a fluid catalytic cracking unit went into operation there in September, 1943; a blending agent unit, in December, 1943, and a hydrogenation unit in January, 1944.

Wichita Falls

Early in 1941 Continental Oil Company put into operation its new $750,000 thermal polymerization plant at Wichita Falls—to produce high-octane polymer gasoline. Continental Oil Company is now producing 100-octane gasoline at Wichita Falls, an alkylation unit having been completed in December, 1942.

Fort Worth

In 1941 Magnolia Petroleum Company was adding a new combination unit and polymerization plant to its Fort Worth refinery.

Pampa

Danciger Oil and Refining, Inc. constructed in 1941 a catalytic polymerization unit at its Pampa plant.

Smith's Bluff

Early in the summer of 1940 Pure Oil Company announced plans for building a new polymerization unit at its Smith's Bluff refinery. Pure Oil Company will have two high-octane aviation gasoline plants at Smith's

Bluff. An alkylation unit was completed in November, 1943, and a Thermofor catalytic unit in February, 1944.

Houston Ship Channel

Late in 1940 Shell Oil Company added a $1 million alkylation plant at its Deer Park refinery on the Houston Ship Channel.

Also late in 1940 a $1,500,000 dewaxing plant was added to the Sinclair refinery at Pasadena. Installations for the production of 100-octane gasoline include:

(a) a catalytic cracking unit, which produces a high octane base stock, as well as the necessary components for
(b) the alkylation unit, completed in July, 1943, which yields high-grade blending agents for aviation fuel.
(c) an isomerization unit which was added in July, 1943.

Beaumont-Port Arthur

Magnolia Petroleum Corporation installed two Houdry cracking units at its Beaumont refinery in the early part of 1941. This is one of the largest refineries on the Gulf Coast. A new alkylation unit went into operation in July, 1943. A Houdry catalytic cracking unit went into operation at this refinery in July, 1943, and a Thermofor catalytic unit in October, 1943. These units manufacture base stock for aviation gasoline, together with components for alkylating into 100-octane blending agents as well as butylene for the production of butadiene.

Gulf Oil Corporation has two 100-octane aviation gasoline plants at Port Arthur. Even a brief sketch of the development phases of these various operations reveals something of the magniture of these refinery enterprises. Early in 1941 Gulf was using at its Port Arthur refinery the new polyform process, which combines polymerization and cracking operations, using as feed stock oil mixed with gases, mainly propane and butane.

Gulf had been operating a $1 million iso-octane plant at Port Arthur for some time before 1941. It was announced late in 1941 that Gulf planned a 2,500-barrel aviation gasoline unit at Port Arthur, which would include a Houdry catalytic unit for producing base stock and an iso-octane plant for yielding alkylates, and that the new plant would increase the aviation gasoline output at this plant to 4,000 barrels daily.

In February, 1942, it was reported that a new $3 million unit would be constructed at the Gulf Oil Corporation's refinery at Port Arthur—and that this would double the plant's output of 100-octane gasoline.

In April, 1943, Gulf announced the completion of a new Houdry catalytic-cracking unit as well as an alkylation unit at Port Arthur for producing 100-octane aviation fuel. At that time it was reported that the Gulf Oil Corporation had expended some $15 million for increasing its aviation gasoline facilities at Port Arthur, and that other projects were under construction. A Thermofor catalytic cracking unit was placed in operation in the fall of 1943.

Atlantic Refining Company put into operation an alkylation unit at its refinery at Atreco near Port Arthur in February, 1944. A fluid catalytic cracking plant and an alkylation unit are scheduled for completion in the spring of 1944.

Early in 1941 the Texas Company installed a cold sulphuric acid alkylation unit, together with small catalytic cracking units, at its refinery at Port Arthur; it also added about the same time facilities for furfural extraction, together with solvent dewaxing equipment.

For early 1940 the Texas Company planned the addition of a $2,500,000 lubricating oil plant at Port Arthur and a $7 million alkylation plant to its Gulf Coast operations.

About the same time the Texas Company announced that it would spend some $25 million on plants in the Gulf Coast for the war effort. The Texas Company began operating an alkylation unit and an isomerization unit at Port Arthur in March 1943; a fluid catalytic cracking unit was completed in February, 1944. Another fluid catalytic cracking plant is scheduled for operation in the spring of 1944 and a Thermofor cracking unit for the summer of 1944.

Texas City

Early in 1941 the first commercial hydroforming plant went into operation at Texas City, in the new and modern refinery of the Pan American Refining Company. This unit was designed to convert all the low-octane straight-run heavy naphtha produced from the two largest cracking plants in the world into high octane gasoline for base stock. Hydroforming is a catalytic reforming process which in the presence of recirculated gases containing hydrogen yields, from selected feedstocks, certain aromatic hydrocarbons.

The hydroforming process may be used to produce high-octane aviation gasoline—or by modification, the process will yield a product containing around 80 per cent of such aromatics as toluene and xylenes.

Pan-American Refining Company completed a fluid catalytic cracking unit at Texas City in March, 1944 and a butylene unit went into operation at the same time. An isomerization plant is scheduled for completion late in 1944.

Republic Oil Refining Company was constructing late in 1943 a $7 million addition to its Texas City refinery, to produce 100-octane aviation gasoline. This addition was built with government funds and will be operated by the company. An alkylation unit was completed in February, 1944, and a fluid catalytic cracking unit is scheduled for completion in the spring of 1944.

On March 16, 1944, it was announced that the Southport Petroleum Company had begun producing 100-octane aviation gasoline at its Texas City plant. Construction on the plant was begun in September, 1942. The refinery includes a Houdry catalytic cracking unit completed in January, 1944, and a hydrofluoric alkylation unit which began operating in March, 1944.

Corpus Christi

Sinclair Refining Company is scheduled to complete pleted at the Baytown refinery its first fluid catalytic cracking unit in the spring of 1944.

Great Southern Corporation completed an alkylation unit in February, 1944, and is scheduled to complete a dehydrogenation unit in the spring of 1944.

Baytown

During 1942 Humble Oil and Refining Company completed at the Baytown refinery its first fluid catalytic cracking plant, installed a naphtha superfractionating unit, and expanded their alkylation facilities. These developments involved an expenditure of $14,700,000 by Humble—which was twice the amount that company had expended in oil refinery developments during 1941.

In June, 1942, Humble Oil and Refining Company closed a contract with the government for the construction of a plant to produce Butyl rubber, the capacity to be 30,000 tons, and at an estimated cost of $20 million. This plant will be operated by Humble under contract with Rubber Reserve Company, a subsidiary of R.F.C. Butylenes will be supplied for this plant from the adjacent Baytown refinery.

Prior to starting the Butyl plant, Humble had arranged for a butadiene plant, also of 30,000-ton capacity in which the government invested $16 million. The butadiene plant was opened in August, 1943. With butadiene supplied by the new catalytic-cracking unit noted below, the production in 1944 may go beyond the 30,000-ton annual capacity.

Total investment for these two plants by the government and Humble totals approximately $43 million. In October, 1943, a $2 million hydrogenation unit for the Baytown refinery of Humble Oil and Refinery Company was announced.

Humble's second fluid catalytic-cracking unit at Baytown began operating January 29, 1944, the first one having begun operations just a year before. Isobutane, isopentane, and pentylenes from this unit will be used principally for the production of base stock for aviation fuel. Butylenes, also produced in this plant, will go either into the aviation-gasoline program, into butadiene, or into the butyl rubber plant. The butyl rubber plant is being constructed adjacent to the Baytown refinery and it will go into operation in the spring of 1944.

The second catalytic-cracking unit circulates approximately 40-tons of catalyst per minute, as against the 10-tons of catalyst per minute for the first one.

An alkylation plant was completed in January, 1943, and a hydrogenation plant is scheduled for completion in the summer of 1944.

As concisely summarized in a statement in *The Oil and Gas Journal* of February 3, 1944:

"Both the old and new units are almost entirely automatic and require relatively small operating staffs. Their work is confined almost entirely to the control room whose walls are a series of large panels filled with gages, meters, and electrical control instruments. The operating personnel for the new Baytown unit was trained at the older unit while the new one was under construction."

Sinclair Refining Company completed an alkylation unit at its Houston refinery in March, 1943, a Houdry catalytic cracking unit in April, 1943, and a Thermofor cracking unit in March, 1944. A depentanizing unit is scheduled for completion in the spring of 1944.

Late in 1942 announcement was made that the butadiene plant of Sinclair Rubber Company, near the Sinclair Oil Corporation's Houston refinery, was under construction. This plant, with a capacity of 50,000 tons of butadiene, and to cost around $24 million, was scheduled to start operations in September, 1943. It will supply butadiene for the 60,000-ton synthetic rubber plant to be operated by Goodyear Tire and Rubber Company. This copolymer plant was built with funds from Defense Plant Corporation amounting to $6,900,000.

The raw materials refinery gases will be supplied by Sinclair Refining Company, Pan-American Refining Corporation, and Crown Central Petroleum Corporation.

In January, 1944, Defense Plant Corporation increased its contract to Crown Central Petroleum Corporation to provide additional facilities at its Houston plant at a cost of $2,100,000. Crown Central Petroleum Company is scheduled to complete at Houston a Thermofor cracking plant, as well as alkylation and isomerization units, all in the spring of 1944.

In July, 1943, it was announced that Defense Plant Corporation's overall commitment to J. S. Abercrombie Company and Harrison Oil Company was approximately $15,500,000. In December, 1943, it was announced that Defense Plant Corporation's contract with this company had been increased by $4,000,000 for plant expansion facilities, making an overall commitment of $22,700,000. The 100-octane gasoline plant of this company at Sweeny, Texas, was to have begun operating early in 1944. A thermal reforming plant went into operation in November, 1943, and an alkylation unit in March, 1944. A fluid catalytic cracking unit is scheduled for completion in the spring of 1944 and an isomerization unit in the summer of 1944.

Borger

Phillips Petroleum Company has a 100-octane aviation gasoline plant in operation at Borger and two other plants are scheduled for completion in 1944. An alkylation unit was completed in January, 1943. Scheduled for completion in the spring of 1944 are another alkylation unit, a catalytic cracking unit, and a fluid catalytic cracking unit.

Etter

Shell Chemical Company, as has been noted previously in this article, is producing components for aviation gasoline at Etter.

Oklahoma

Continental Oil Company's 100-octane gasoline plant at Ponca City, Oklahoma, built at a cost of approximately $12 million, and designed to make approximately 5,000 barrels of high-test aviation fuel daily, producing exclusively for the war effort, is scheduled for completion in the spring of 1944.

It includes a Thermofor catalytic cracking unit for producing base stock and an alkylation plant to yield a blending agent, isooctane, as well as an isomerization unit.

Base stock and blending agents will be blended with tetraethyl lead and iso-pentane (a product of casinghead gasoline) to yield high test aviation fuel.

Other Oklahoma plants include Champlin Refining Company's operations at Enid; alkylation and isomeriza-

tion units were completed in February, 1944. Associated Refineries, Inc., at Duncan is scheduled to have in operation in the spring of 1944 a fluid catalytic cracking plant, together with alkylation and isomerization units.

Cycling Plants and Products

As defined by R. L. Keyes, in *The Oil and Gas Journal*, April 13, 1944: "Cycling, sometimes referred to as recycling, is the primary recovery operation by which 'condensate' commonly called 'distillate' is separated or extracted from high pressure gas and the residue gas then compressed and returned to the formation. This method of production is applicable to and necessary in reservoirs where the hydrocarbons present exist in a single vapor phase in order to maintain the formation pressure and prevent condensation and resultant loss of liquid hydrocarbons in the reservoir.

"While pressure maintenance is an integral part of cycling, the term 'pressure maintenance' is used also and more generally to cover operations involving . . . high-pressure gas-distillate reservoirs.

"At ordinary temperatures and pressures up to 500 or 600 lb. per sq. in. mixtures of gas and liquid vapors tend to condense with increasing pressure and this fact was utilized in the early compression natural-gasoline extraction plants. At higher pressures, however, the reverse is true and condensation takes place in increasing amounts with a reduction in the pressure and this is termed retrograde condensation.

"The phenomena of retrograde condensation have been known and recognized in the laboratory for nearly 70 years and some of the effects were noticed in producing gas at high pressures as early as 1930, but it is only in the last 6 years that direct application of these have been used in extracting condensate and cycling of high-pressure gas reservoirs."

Cycling has come to be important in furnishing raw materials for both synthetic rubber intermediates and components of 100-octane gasoline.

The first commercial cycling plants were constructed in Texas in 1938. The success of these initial projects led to the establishment of a large number of cycling plants in the State during 1939 and 1940. The first cycling plant in Louisiana was established in 1941. However, Continental Oil Company had built a high pressure, field-stabilization and pressure-maintenance plant in the Tepetate oil field as early as 1936. The success of this plant led Continental to install a pressure-maintenance plant at Ville Platte in 1940; this is said to be the largest high-pressure project involving pressure maintenance in the entire oil and natural gasoline industry.

The large cycling plant of the Cotton Valley Operators Committee at Cotton Valley, Louisiana, is well known and The Texas Company has under construction at Erath, in Vermillion Parish, a cycling plant which, it is reported, will have the largest capacity of any in the country.

It may be re-emphasized that cycling plants have grown to their present large proportions within the short period of only 6 years. The aggregate investment in cycling plants alone now totals approximately $40 million. When the second cycling plant at Katy is complete, the total estimated investment there alone will be approximately $8 million. Ultimately these Katy plants will process 500 million cubic feet of gas daily and will yield approximately 13,600 barrels of products per day. When the Erath plant in Louisiana gets into operation the cycling plants of the country will be yielding about 60 per cent of the combined total of products from natural gasoline and cycling plants.

At the end of 1940 Texas and Louisiana had 24 cycling plants in operation and 5 were under construction. At present, these two states have 35 cycling plants in operation; another is nearing completion and three new ones are under construction and in addition 2 others are contemplated in the immediate future. California has one cycling plant near completion and another is under construction.

The 35 cycling plants in operation are located in 25 different fields. They are processing about 2.4 billion cubic feet of gas daily from which approximately 68,250 barrels of products are being extracted per day.

CYCLING PLANTS IN TEXAS

	Approximate Daily Liquid Capacity in Gallons
Brazoria County	
Abercrombie-Magnolia Petroleum Company, Old Ocean	240,000
Duval County	
Duval Gasoline, Benavides	10,000
Refugio County	
Stanolind Oil and Gas Company, La Rosa	45,000
Nueces County	
Agua Dulce Company, Agua Dulce	35,000
Chicago Corporation, Coastal	100,000
Chicago Corporation, Wardner	150,000
Gulf Plains Corporation, Bishop	125,000
L. M. Lockhart, Banquete	40,000
Jackson County	
Francitas Gas Company, Francitas	60,000
Jim Wells County	
Skinner and Eddy Corporation, Alice	35,000
Matagorda County	
American Liberty Oil Company, Blessing	40,000
Brooks County	
La Gloria Corporation, La Gloria	300,000
Harris County	
Distillate Production Corporation, North Houston	80,000
H. M. Harrell, Bammel	40,000
O. W. Killam, Joyce Richardson	10,000
Waller County	
Humble Oil and Refining Company, Katy	600,000
Chambers County	
Sun Oil Company, Seabreeze	5,000
Montgomery County	
Superior Oil Company, Lake Creek	300,000
Houston County	
Gasoline Production Corporation, Grapeland	50,000
Geier-Jackson Recycling Company, Grapeland	75,000
Lone Star Producing Company, Grapeland	100,000
American Liberty Oil Company, Grapeland	50,000
Henderson County	
Lone Star Producing Company, Opelika	200,000
Tide Water Associated-Seaboard, Cayuga 1	60,000
Tide Water Associated-Seaboard, Cayuga 2	60,000
Roeser and Pendleton, Cayuga	5,000
Anderson County	
Tide Water Associated-Seaboard, Long Lake 1	60,000
Trinity Gas Corporation, Long Lake	20,000
Hunt Oil Company, Long Lake	50,000
Anco Gas Corporation, Long Lake	50,000
Gregg County	
Lone Star Producing Company, Willow Springs	25,000

Additions are under construction at the Old Ocean and the Katy plants.

UNDER CONSTRUCTION

	Approximate Daily Liquid Capacity in Gallons
Colorado County	
Shell Oil Company, Inc., Sheridan	260,000
Duval County	
Trinity Gas-Standard of Texas, Sejita	70,000

Source of Data: *The Oil and Gas Journal*, April 13, 1944.

Natural-Gasoline Industry

The natural-gasoline industry has of course become an important enterprise in the production of its conventional products. In its newer phases this industry is not only supplying various grades of natural gasoline but also normal butane, isobutane, propane and isopentane. These latter products are important in supplying components for high-grade aviation fuel and synthetic rubber, as well as for numerous organic chemicals.

No attempt will be made in this article to discuss the industry as a whole. The new central fractionation plant of the Lone Star Gas Company and the Lone Star Producing Company now in operation at Ranger, Texas, may serve as a type to illustrate the newer aspects of the industry. This plant will process raw gasoline produced in several plants of the West-central Texas district. It is reported as capable of producing normal butane, isobutane, propane, normal pentane, isopentane and heavier hydrocarbons.

In another case, the recently completed cycling project of Distillate Production Corporation at North Houston-Fairbanks in Harris County processes approximately 55,000,000 cubic feet of gas daily. This plant was designed to obtain a high percentage of butane and propane. The gas processed contains methane, ethane, propane, butane, isobutane, normal pentane, isopentane, hexanes, and heavier hydrocarbons.

Unquestionably natural gasoline and cycling products will increase in importance. Something of the size of natural gasoline and cycling plants now under construction is indicated by the costs of the plants. The Shell Oil Company's plant at Sheridan in Colorado County, scheduled for completion in October, 1944, is being built at a cost of $2,450,500. Shell's other plant, at Wasson, to be completed in August, with a daily capacity of 1,380 barrels, is to cost $1,450,000. Humble Oil and Refining Company's Katy No. 2, scheduled for completion in June, having a daily capacity of 6,980 barrels, is to cost $4,600,000. Phillips Petroleum Company's plant at Seminole, with a daily capacity of 2,050 barrels, is to be completed in June, at a cost of $1,165,000. The additional plant construction of J. S. Abercrombie and Magnolia Petroleum Company, scheduled for completion in September and which is to have a capacity of 5,640 barrels daily, is being built at a cost of $2,851,000.

SYNTHETIC RUBBER

And Intermediates (Rated Annual Capacity)

Estimated Costs of the Butadiene Plants Are Given

Borger
- Butadiene: 45,000 short tons (Phillips Petroleum Company), $30,767,603.
- Copolymer: 45,000 short tone (The B. F. Goodrich Tire and Rubber Company.

Port Neches
- Butadiene: 100,000 short tons (Neches Butane Products Co.), $60,000,000.
- Copolymer: 120,000 short tons (Firestone: 60,000 short tons, Goodrich: 60,000 short tons), $40,000,000.

Baytown
- Butadiene: 30,000 short tons (Humble), $18,987,000.
- Copolymer: 30,000 short tons (General Tire).
- Butyl: 30,000 short tons (Humble), $20,000,000.

Houston
- Butadiene: 50,000 short tons (Sinclair), $30,000,000.
- Copolymer: 60,000 short tons (Goodyear).

Texas City
- Styrene: 51,000 short tons (Monsanto).

Ingleside
- Butadiene: 7,000 short tons (Humble), $4,100,000.

Corpus Christi
- Butadiene: 5,500 short tons (Taylor Refining Company), $1,400,000.

Velasco
- Styrene: 50,000 short tons (Dow), $18,000,000.

Data, except for the estimated costs, are from "Progress Report No. 5, War Production Board, Office of Rubber Director, March 17, 1944."

Estimated total expenditures of the government's rubber program in Texas have been placed at $250 million. It is also estimated that Texas will produce about a third of the "Government" synthetic rubber.

The butylene dehydrogenation process (known as the Jersey process) will supply approximately 65 per cent of the butadiene from petroleum in the Government program.

Raw materials for the Jersey process are derived from refinery operations, generally catalytic cracking operations, which yield butylenes. These operations yield the desired normal butylenes, along with isobutylenes, isobutane, normal butane, and small amounts of heavier and lighter hydrocarbons.

Tire Plants

Construction of the new $3 million tire plant at Waco, Texas, which will be owned and operated by General Tire and Rubber Company, was scheduled to begin in January, 1944.

Actual tire production, for trucks, is scheduled for late summer in 1944. The plant will use synthetic rubber made at the company's Baytown, Texas, plant.

Miami, Oklahoma, has been selected by the B. F. Goodrich Company for a new synthetic rubber tire manufacturing plant which will be built at an estimated cost of $6 million.

It may be of interest to note that a $2 million rayon mill will be constructed on Seneca River southwest of Clemson College, South Carolina, for Roger Millikin, of Deering Millikin and Company of New York. The plant will weave and twist rayon tie cord to be used in synthetic rubber tires, and also that a $30 million addition is to be built at the Gadsden, Alabama, plant of the Goodyear Tire & Rubber Company.

It was reported in April, 1943, that Firestone Tire and Rubber Company had acquired the Fort Worth Textile Mill, and that it would henceforth operate the plant.

Elmer H. Johnson.

The Cotton Goods Bottleneck

For more than two years the demand for cotton goods has exceeded production, and for about a year and a half the volume of cotton manufactured in the United States has been steadily declining. Peak consumption in the United States occurred in the cotton year 1941–42, with 11,170,000 bales. If consumption for the remainder of this year should equal the rate for the first 8 months of the year, the United States will consume approximately 10,170,000 bales during 1943–44.

With demand stronger than ever, why should mill consumption decline a million bales from the peak in two years? Many facts and conditions contribute to it. Nevertheless, those interested in maintaining the strength and virility of the cotton industry as a whole are concerned over signs of competitive weakness in the cotton manufacturing industry.

Cotton growers and the cotton-growing region are vitally interested in the cotton manufacturing industry's being able to process raw cotton and merchandise goods in competition with synthetics. Cotton manufacturers must continually lower their costs in order to do this.

There are some greatly disturbing factors in the situation. During the past three years, many millions of dollars have gone into new equipment for the production of rayon for making products formerly made of cotton. Some assign one reason for this, and some another, but regardless of the reasons, the substitutions are being made, and that is the important thing. The fundamental question is: Is this a sign of competitive weakness on the part of the cotton manufacturing industry?

It is realized that cotton manufacturing is not just one industry, but rather, several industries, each with competitive conditions and efficiencies differing from the others. The fact remains, however, that there are mills running continuously on three shifts a day, and at the same time, there are other mills entirely idle, for during February there were 818,000 spindles idle all the month. In this connection, it is interesting to note that there were 1,127,000 fewer cotton spinning spindles in place in the United States during February, 1944, than in February, 1941.

These spindles are not being junked or kept idle because there is a scarcity of raw cotton, or because of a lack of demand for cotton goods. There are many reasons given for the general decline in cotton mill activity, but, in the final analysis, they all sum up to the same thing—the lack of sufficient margin between ceiling prices on mill products, and the price of raw cotton. How many more mills are there in this country that are obsolete—unable to survive?

The present situation could doubtless be remedied, temporarily at least, by increasing mill margins by raising ceiling prices on cotton goods. This would increase mill activity, and more cotton would be consumed so long as the war lasts, but would such action lead to further increases in costs in the long run; and would the higher costs live to plague the whole cotton industry in the post-war period? Would not some form of temporary subsidy for the weak mills be better than higher prices for all?

The cotton industry is destined to face very serious competition after the war; and cotton manufacturers, no less than the cotton growers, will be compelled to lower their costs.

It is popular to propose to cure the ills of the cotton industry by guaranteeing the farmers parity price, and the mills, costs plus a reasonable profit, but such a policy would be the surest way to perpetuate inefficiency, and eventually to kill the whole industry.

A. B. Cox.

COTTON BALANCE SHEET FOR THE U.S. AS OF APRIL 1, 1944

(In Thousands of Running Bales Except as Noted)

Year	Carryover August 1	Imports to Apr. 1*	Gov. Est. as of April 1	Total	Cons. to April 1	Exports to April 1	Total	April 1 Balance
1934–1935	7,746	74	9,472	17,292	3,034	3,573	6,607	10,685
1935–1936	7,138	90	10,420	17,648	4,081	4,814	8,895	8,753
1936–1937	5,397	139	12,130	17,666	5,298	4,389	9,687	7,979
1937–1938	4,498	80	18,242	22,820	4,017	4,657	8,674	14,146
1938–1939	11,533	95	11,621	23,249	4,609	2,786	7,395	15,854
1939–1940	13,033	112	11,481	24,626	5,331	5,350	10,681	13,945
1940–1941	10,596	100	12,298	22,994	6,071	811	6,882	16,112
1941–1942	12,367	†	10,489	22,856	7,501	†	7,501	15,355
1942–1943	10,590	†	12,437	23,027	7,250	†	7,250	15,777
1943–1944	10,687	†	11,121	21,808	6,804	775	7,579	15,293

The Cotton year begins August 1.
*Figures are in 500-pound bales.
†Not available.

EMPLOYMENT AND PAY ROLLS IN TEXAS

March, 1944

	Estimated Number of Workers Employed*		Percentage Change from		Estimated Amount of Weekly Pay Roll		Percentage Change from	
	Feb. 1944[1]	March 1944[2]	Feb. 1944	March 1943	Feb. 1944[1]	March 1944[2]	Feb. 1944	March 1943
MANUFACTURING								
All Manufacturing Industries	166,842	164,153	− 1.6	+ 0.5	$5,487,378	$5,482,443	− 0.1	+18.8
Food Products								
Baking	8,425	8,635	+ 2.5	+11.8	269,214	274,850	+ 2.1	+24.4
Carbonated Beverages	3,484	3,515	+ 0.9	+13.5	102,731	102,324	− 0.4	+20.7
Confectionery	1,674	1,552	− 7.3	+30.1	22,668	21,303	− 6.0	+33.6
Flour Milling	2,404	2,334	− 2.9	+ 6.2	72,843	69,989	− 3.9	+24.2
Ice Cream	1,300	1,355	+ 4.2	+12.5	35,829	37,091	+ 3.5	+27.8
Meat Packing	6,228	6,008	− 3.5	− 0.6	189,344	183,702	− 3.0	+ 4.5
Textiles								
Cotton Textile Mills	5,509	5,453	− 1.0	−20.0	125,065	121,333	− 3.0	−14.8
Men's Work Clothing	4,339	4,509	+ 3.9	−10.6	75,758	77,807	+ 2.7	+ 5.9
Forest Products								
Furniture	1,684	1,674	− 0.6	− 6.5	43,675	44,303	+ 1.4	+25.5
Planing Mills	1,915	1,895	− 1.0	− 7.8	54,008	54,728	+ 1.3	+ 5.4
Saw Mills	15,732	14,830	− 5.7	− 7.7	278,303	279,106	+ 0.3	+12.8
Paper Boxes	871	790	− 9.4	− 2.2	19,440	18,078	− 7.0	+ 2.9
Printing and Publishing								
Commercial Printing	2,513	2,506	− 0.3	+ 5.0	89,529	88,128	− 1.6	+20.5
Newspaper Publishing	3,821	4,003	+ 4.8	− 5.2	108,510	112,794	+ 4.0	+ 0.2
Chemical Products								
Cotton Oil Mills	3,727	3,297	−11.5	+ 9.7	61,078	51,723	−15.3	+26.3
Petroleum Refining	23,787	23,923	+ 0.6	+ 8.1	1,367,997	1,379,017	+ 0.8	+30.9
Stone and Clay Products								
Brick and Tile	1,811	1,753	− 3.2	− 1.0	29,621	30,630	+ 3.4	+ 9.3
Cement	950	907	− 4.5	−22.2	34,861	34,466	− 1.1	−19.2
Iron and Steel Products								
Structural and Ornamental Iron	2,564	2,340	− 8.7	−20.5	82,056	78,610	− 4.2	− 0.7
NONMANUFACTURING								
Crude Petroleum Production	26,281	26,223	− 0.2	+ 1.5	1,404,868	1,424,156	+ 1.4	+30.7
Quarrying	(4)	(4)	− 1.3	−15.3	(4)	(4)	+ 0.1	− 1.8
Public Utilities	(4)	(4)	− 0.6	+ 5.0	(4)	(4)	− 0.9	+15.8
Retail Trade	202,081	202,081	+ (3)	− 3.0	4,667,289	4,728,252	+ 1.3	+11.4
Wholesale Trade	61,406	62,683	+ 2.1	+ 3.4	2,332,006	2,399,470	+ 2.9	+13.2
Dyeing and Cleaning	2,815	2,815	± (6)	+ 1.9	63,664	66,272	+ 4.1	+24.3
Hotels	19,036	19,266	+ 1.2	+ 7.7	338,180	332,467	− 1.7	+29.3
Power Laundries	14,126	14,068	− 0.4	− 3.7	246,896	234,333	− 5.1	+ 3.1

CHANGES IN EMPLOYMENT AND PAY ROLLS IN SELECTED CITIES[6]

	Employment Percentage Change		Pay Rolls Percentage Change			Employment Percentage Change		Pay Rolls Percentage Change	
	Feb., 1944 to Mar., 1944	Mar., 1943 to Mar., 1944	Feb., 1944 to Mar., 1944	Mar., 1943 to Mar., 1944		Feb., 1944 to Mar., 1944	Mar., 1943 to Mar., 1944	Feb., 1944 to Mar., 1944	Mar., 1943 to Mar., 1944
Abilene	− 2.9	− 3.6	− 1.2	+ 12.5	Galveston	− 13.3	+ 12.9	− 24.7	+ 49.1
Amarillo	− 5.4	− 13.0	− 4.3	− 4.8	Houston	− 3.1	− 0.2	+ 6.3	+ 6.1
Austin	+ 1.6	+ 0.5	+ 3.5	+ 9.6	Port Arthur	+ 0.7	+ 3.2	− 1.1	+ 26.7
Beaumont	− 1.4	− 6.6	− 6.2	− 2.8	San Antonio	− 0.4	+ 0.9	+ 1.7	+ 11.4
Dallas	+ 0.2	+ 35.5	− 0.9	+ 69.1	Sherman	− 2.4	− 5.0	+ 2.6	+ 14.0
El Paso	+ 0.6	+ 0.5	+ 1.4	+ 23.4	Waco	+ 1.2	+ 5.1	+ 2.7	+ 14.5
Fort Worth	− 4.0	+ 8.1	− 3.5	+ 21.4	Wichita Falls	+ 1.9	− 17.0	+ 3.9	+ 10.7
					STATE	− 2.0	+ 6.5	+ 0.1	+ 19.9

ESTIMATED NUMBER OF EMPLOYEES IN NONAGRICULTURAL BUSINESS AND GOVEVRNMENT ESTABLISHMENTS[7]

	1942[1]	1943[1]	1944		1942[1]	1943
January	1,170,000	1,385,000	1,429,000[2]	July	1,317,000	1,450,000[2]
February	1,199,000	1,397,000		August	1,352,000	1,441,000[2]
March	1,226,000	1,415,000		September	1,373,000	1,448,000[2]
April	1,222,000	1,433,000		October	1,384,000	1,455,000[2]
May	1,251,000	1,458,000		November	1,389,000	1,461,000[2]
June	1,291,000	1,478,000		December	1,413,700	1,470,000[2]

*Does not include proprietors, firm members, officers of corporations, or other principal executives. Factory employment excludes also office, sales, technical and professional personnel.

[1]Revised.

[2]Subject to revision.

[3]Less than 1/10 of 1 per cent.

[4]Not available.

[5]Based on unweighted figures.

[6]No change.

[7]Not including self-employed persons, casual workers, or domestic servants, and exclusive of military and maritime personnel. These figures are furnished by the Bureau of Labor Statistics, U.S. Department of Labor.

Prepared from reports from representative Texas establishments to the Bureau of Business Research coöperating with the Bureau of Labor Statistics. Due to the national emergency, publication of data for certain industries, is being withheld until further notice.

MARCH CREDIT RATIOS IN TEXAS DEPARTMENT AND APPAREL STORES

(Expressed in Per Cent)

	Number of Stores Reporting	Ratio of Credit Sales to Net Sales		Ratio of Collections to Outstandings		Ratio of Credit Salaries to Credit Sales	
		1944	1943	1944	1943	1944	1943
All Stores	57	46.4	49.5	66.7	60.7	1.0	1.2
Stores Grouped by Cities:							
Austin	5	41.1	44.0	71.7	70.6	1.2	1.3
Corpus Christi	3	40.2		83.9	45.3	1.6	1.4
Dallas	9	54.2	51.4	65.4	54.7	0.7	1.6
Fort Worth	5	40.0	47.6	67.3	62.6	1.1	1.3
Houston	5	45.2	57.5	65.1	59.3	1.4	0.9
San Antonio	5	42.6	50.5	68.3	60.1	1.3	1.2
Waco	5	48.2	39.3	66.1	63.2	1.1	1.6
All Others	20	39.6	44.7	67.4	68.3	1.3	1.4
Stores Grouped According to Type of Store:							
Department Stores (Annual Volume Over $500,000)	17	43.3	48.2	67.8	61.5	1.1	1.3
Department Stores (Annual Volume under $500,000)	10	43.0	42.9	63.9	65.9	1.4	1.5
Dry-Goods-Apparel Stores	2	46.2	51.9	67.3	67.7	1.5	2.0
Women's Specialty Shops	17	54.5	53.6	64.8	59.0	0.7	0.9
Men's Clothing Stores	11	44.3	50.8	67.6	60.1	1.5	1.4
Stores Grouped According to Volume of Net Sales During 1943:							
Over $2,500,000	17	47.8	51.5	66.0	59.8	0.9	1.1
$2,500,000 down to $1,000,000	10	40.9	41.7	71.7	64.1	0.8	1.0
$1,000,000 down to $500,000	11	42.4	43.6	65.8	66.1	1.0	1.1
Less than $500,000	19	42.9	46.1	69.5	64.3	1.4	1.4

NOTE: The ratios shown for each year, in the order in which they appear from left to right are obtained by the following computations: (1) Credit Sales divided by Net Sales. (2) Collections during the month divided by the total accounts unpaid on the first of the month. (3) Salaries of the credit department divided by credit sales. The data are reported to the Bureau of Business Research by Texas retail stores.

MARCH RETAIL SALES OF INDEPENDENT STORES IN TEXAS

	Number of Establishments Reporting	Percentage Changes in Dollar Sales March, 1944 from March, 1943	March, 1944 from Feb., 1944	Year 1944 from Year 1943
TOTAL TEXAS	868	+22.0	+18.9	+11.1
STORES GROUPED BY LINE OF GOODS CARRIED:				
APPAREL	21	+24.5	+22.8	+ 8.1
Family Clothing Stores	30	+28.1	+28.4	+ 3.4
Men's and Boys' Clothing Stores	10	+28.4	+50.3	− 5.9
Shoe Stores	29	+50.8	+24.2	+18.0
Women's Specialty Shops	66	− 7.6	+ 7.8	+10.7
AUTOMOTIVE*	59	− 7.4	+ 7.7	+12.1
Motor Vehicle Dealers	92	+ 6.9	+12.2	+ 7.8
COUNTRY GENERAL	53	+29.7	+21.1	+13.4
DEPARTMENT STORES	100	+16.0	+ 8.7	+16.0
DRUG STORES	25	+20.1	+19.5	+ 6.6
DRY GOODS AND GENERAL MERCHANDISE	25	+18.2	+13.2	+ 9.9
FILLING STATIONS	17	+28.0	− 5.3	+35.0
FLORISTS	126	+10.2	+10.8	+ 8.8
FOOD*	31	+ 4.5	+ 9.5	+ 5.8
Grocery Stores	88	+12.2	+11.2	+10.1
Grocery and Meat Stores	60	− 0.5	+17.0	− 4.2
FURNITURE AND HOUSEHOLD*	54	+ 0.6	+18.9	− 2.9
Furniture Stores	18	+50.5	+48.4	+26.1
JEWELRY	156	+ 7.2	+16.4	+ 6.9
LUMBER, BUILDING, AND HARDWARE*	10	+43.3	+13.2	+24.8
Farm Implement Dealers	47	+29.8	+71.1	+27.1
Hardware Stores	97	− 7.4	+15.9	− 2.9
Lumber and Building Material Dealers	24	+21.9	+ 8.7	+21.6
RESTAURANTS	8	− 2.1	+15.8	+ 7.9
ALL OTHER STORES				
TEXAS STORES GROUPED ACCORDING TO POPULATION OF CITY:				
All Stores in Cities of—				
Over 100,000 Population	135	+32.4	+21.4	+13.6
50,000–100,000 Population	94	+10.3	+20.9	+ 8.4
2,500–50,000 Population	423	+10.7	+14.1	+ 7.5
Less than 2,500 Population	216	+16.6	+13.2	+16.2

*Group total includes kinds of business other than the classification listed.
Prepared from reports of independent retail stores to the Bureau of BusinessResearch, coöperating with the U.S. Bureau of the Census.

BUILDING PERMITS

	March, 1944	March, 1943	Feb., 1944	Year 1944	Year 1943
Abilene	$ 11,290	$ 9,940	$ 7,605	$ 149,095	$ 238,449
Amarillo	188,395	38,824	7,115	269,410	556,409
Austin	57,364	47,228	18,038	106,930	439,957
Beaumont	48,956	44,376	166,923	234,799	2,085,370
Big Spring	11,675	3,599	9,500	†	†
Brownsville	8,405	2,551	3,065	14,395	13,810
Brownwood	4,000	1,550	93,275	118,225	24,243
Cleburne	550	1,700	3,225	†	†
Coleman	300	0	0	300	19,450
Corpus Christi	104,357	352,963	138,830	344,862	3,079,742
Corsicana	678	2,385	710	2,589	33,680
Dallas	433,797	135,896	312,729	2,113,898	5,534,869
Denton	1,940	2,675	3,550	6,890	28,845
Edinburg	10,890	685	1,903	14,507	39,392
El Paso	40,285	61,352	26,646	104,761	465,121
Fort Worth	374,468	89,461	191,709	830,633	6,508,870
Galveston	44,085	224,192	103,811	264,912	1,099,623
Gladewater	550	0	1,725	2,805	7,000
Graham	0	0	1,665	4,995	12,378
Harlingen	17,650	2,265	1,950	23,600	7,698
Houston	555,896	3,429,310	438,540	1,482,636	8,458,060
Jacksonville	12,300	700	1,850	18,750	14,955
Kenedy	3,800	0	0	3,800	5,740
Kerrville	350	673	675	2,700	58,409
Lubbock	39,627	15,647	32,304	89,939	270,731
McAllen	9,265	11,635	7,485	22,875	99,573
Marshall	5,251	275,056	5,866	19,736	343,294
Midland	91,400	1,325	4,600	116,550	45,769
New Braunfels	4,430	525	500	6,981	14,702
Paris	82,325	12,530	8,620	100,295	265,105
Plainview	2,150	800	200	2,500	42,455
Port Arthur	30,848	12,919	6,340	78,986	210,768
San Antonio	378,482	224,872	383,809	1,032,280	2,973,605
Sherman	12,437	17,971	10,102	29,987	132,088
Snyder	0	0	0	0	42,400
Sweetwater	9,075	2,205	2,590	†	†
Tyler	10,668	3,129	7,678	26,630	128,657
Waco	114,585	62,298	147,755	279,867	785,788
Wichita Falls	33,567	6,082	17,630	69,987	280,524
TOTAL	$ 2,756,091	$ 5,099,319	$ 2,170,518	$ 7,992,105	$34,367,529

†Not available.

NOTE: Compiled from reports from Texas chambers of commerce to the Bureau of Business Research.

TEXAS CHARTERS

	March, 1944	March, 1943	Feb., 1944	First Quarter 1944	First Quarter 1943
Domestic Corporations:					
Capitalization*	$314	$1,576	$844	$1,722	$2,142
Number	50	39	48	142	89
Classification of new corporations:					
Banking-Finance	0	1	2	5	2
Manufacturing	2	5	8	16	12
Merchandising	11	7	9	28	18
Oil	4	5	2	7	10
Public Service	0	0	0	2	1
Real Estate Building	21	14	9	43	26
Transportation	1	1	2	4	5
All Others	11	6	16	37	15
Number capitalized at less than $5,000	17	12	14	45	32
Number capitalized at $100,00 or more	0	2	0	2	2
Foreign Corporations (Number)	10	13	14	39	47

*In thousands.

NOTE: Compiled from records of the Secretary of State.

LUMBER

(In Board Feet)

	March, 1944	March, 1943	Feb., 1944
Southern Pine Mills:			
Average Weekly Production per unit	206,170	245,985	201,945
Average Weekly Shipments per unit	213,026	270,591	217,092
Average Unfilled Orders per unit, end of month	1,735,789	1,461,361	1,775,386

NOTE: From Southern Pine Association.

TEXAS COMMERCIAL FAILURES

	March, 1944	March, 1943	Feb., 1944	First Quarter 1944	First Quarter 1943
Number	0	1	0	0	7
Liabilities*	0	$10	0	0	$44
Assets*	0	8	0	0	23
Average Liabilities per failure*	0	10	0	0	6

*In thousands.

NOTE: From Dun and Bradstreet, Inc.

POSTAL RECEIPTS

	March, 1944	March, 1943	Feb., 1944	Year 1944	Year 1943
Abilene	$ 42,425	$ 41,638	$ 40,331	$ 128,463	$ 126,376
Austin	93,345	88,872	99,659	277,608	247,638
Beaumont	46,691	41,127	40,926	134,163	116,163
Big Spring	10,763	10,516	9,645	31,748	29,212
Brownsville	11,096	9,581	9,902	32,705	27,480
Brownwood	22,400	31,171	18,196	63,317	86,454
Childress	5,508	4,461	5,226	16,201	8,691
Cleburne	5,639	4,868	5,250	16,758	14,586
Coleman	4,563	3,529	3,651	13,654	11,356
Corpus Christi	65,736	54,414	60,527	188,008	149,443
Corsicana	9,974	8,235	8,636	29,125	23,899
Dallas	525,096	485,740	501,186	3,038,090	1,354,054
Del Rio	5,921	5,252	5,474	18,337	14,453
Denison	9,797	9,469	9,034	27,854	25,381
Denton	11,446	11,552	11,167	34,842	30,783
Edinburg	3,932	3,676	4,033	12,479	10,771
El Paso	91,781	88,690	86,506	449,758	256,320
Fort Worth	246,420	222,502	217,654	657,245	596,604
Galveston	48,019	43,416	48,402	143,370	133,053
Gladewater	3,778	3,321	3,715	11,224	11,017
Graham	3,397	2,951	3,178	10,304	7,859
Harlingen	15,889	10,540	11,210	40,436	30,285
Houston	373,748	334,633	334,677	1,049,234	926,083
Jacksonville	4,913	4,117	4,708	29,754	61,913
Kenedy	2,260	1,966	2,164	6,915	5,764
Kerrville	3,742	3,322	3,359	11,538	9,429
Lubbock	33,619	31,197	29,836	96,652	86,887
Lufkin	7,935	5,604	6,187	21,499	18,064
McAllen	7,182	5,620	6,123	21,684	17,474
Marshall	10,538	9,261	9,833	31,181	25,638
Palestine	7,716	6,701	7,245	22,575	20,293
Paris	22,774	18,885	19,759	61,604	55,140
Plainview	5,506	5,204	5,914	17,448	14,895
Port Arthur	27,134	24,499	25,199	78,836	67,316
San Angelo	21,002	17,781	19,706	61,334	52,937
San Antonio	254,283	253,305	254,283	740,162	681,557
Sherman	12,039	11,057	11,424	35,065	31,278
Snyder	2,294	1,819	2,134	6,706	5,840
Sweetwater	9,568	7,459	8,244	25,508	21,033
Temple	15,857	14,161	14,917	46,624	38,467
Tyler	29,254	75,013	27,940	86,678	123,279
Waco	54,746	42,078	48,725	149,719	127,275
Wichita Falls	43,266	41,167	40,647	126,175	116,545
TOTAL	$ 2,232,992	$ 2,100,370	$ 2,086,532	$ 8,102,581	$ 5,818,985

NOTE: Compiled from reports from Texas chambers of commerce to the Bureau of Business Research.

PETROLEUM

Daily Average Production (In Barrels)

	March, 1944	March, 1943	Feb., 1944
Coastal Texas*	514,100	353,250	516,600
East Central Texas	116,600	99,800	116,400
East Texas	367,800	323,400	366,200
North Texas	142,300	136,800	140,200
Panhandle	93,800	88,600	97,900
Southwest Texas	291,300	172,900	293,550
West Texas	343,000	218,100	364,700
STATE	1,868,900	1,392,850	1,899,750
UNITED STATES	4,391,000	3,898,750	4,384,000

Gasoline sales as indicated by taxes collected by the State Comptroller were: February, 1944, 90,577,742 gallons; February, 1943, 95,327,649 gallons; January, 1944, 92,864,246 gallons.

*Includes Conroe.

NOTE: From American Petroleum Institute. See accompanying map showing the oil producing districts of Texas.

MARCH RETAIL SALES OF INDEPENDENT STORES IN TEXAS

(By Districts)

	Number of Establishments Reporting	Percentage Changes: March, 1944 from March, 1943	March, 1944 from Feb., 1944	Year to Date 1944 from Year to Date 1943
TOTAL TEXAS	868	+22.0	+18.9	+11.1
TEXAS STORES GROUPED BY PRODUCING AREAS:				
District 1-N	60	+ 3.1	+16.4	− 0.4
Amarillo	20	+ 1.7	+14.3	− 4.7
Pampa	10	+ 1.6	+20.2	− 5.6
Plainview	11	− 0.9	+29.9	+ 2.8
All Others	19	+10.7	+ 9.8	+ 9.8
District 1-S	26	+ 3.5	+14.0	+ 9.4
Lubbock	15	+ 0.2	+11.1	+ 9.1
All Others	11	+18.8	+27.1	+ 9.9
District 2	76	− 6.0	+ 7.4	− 1.7
Abilene	11	− 8.4	+15.1	− 6.2
Wichita Falls	12	− 1.8	+ 2.0	+ 0.6
All Others	53	− 7.0	+ 6.3	*
District 3	28	+18.9	+16.4	+ 8.8
District 4	189	+32.2	+20.4	+14.3
Dallas	29	+45.0	+20.0	+18.7
Fort Worth	20	+25.4	+21.6	+11.5
Sherman	11	+ 9.2	+18.7	− 1.0
Temple	12	−13.1	+22.9	−17.4
Waco	18	+18.8	+20.4	+ 8.4
All Others	99	+19.5	+19.3	+13.9
District 5	89	+18.8	+15.5	+12.0
District 6	34	+18.9	+21.6	+14.8
El Paso	17	+19.3	+21.7	+16.4
All Others	17	+15.4	+20.2	+ 1.6
District 7	44	+16.5	+17.8	+ 9.8
San Angelo	11	+25.8	+20.3	+12.4
All Others	33	+ 3.6	+13.8	+ 5.9
District 8	151	+15.7	+22.4	+ 3.9
Austin	14	− 1.3	+24.4	− 1.1
Corpus Christi	10	−21.0	+ 6.5	−21.0
San Antonio	42	+22.2	+25.1	+ 6.7
All Others	85	+16.3	+12.7	+ 0.7
District 9	103	+26.4	+19.7	+13.1
Houston	44	+31.0	+19.9	+14.7
Port Arthur	10	+23.6	+17.8	+23.6
All Others	49	+13.0	+19.4	+ 9.1
District 10	24	+15.3	+12.6	+ 7.0
District 11	44	+ 9.6	− 0.6	+19.5

*Change of less than .5%.

NOTE: Prepared from reports of independent retail stores to the Bureau of Business Research, coöperating with the U.S. Bureau of the Census.

CEMENT

(In Thousands of Barrels)

	Feb., 1944	Feb., 1943	Jan., 1944
Texas Plants			
Production	479	687	430
Shipments	470	929	449
Stocks	1,124	630	1,116
United States			
Production	5,686	10,293	6,322
Shipments	5,055	8,656	5,040
Stocks	25,059	23,005	24,434
Capacity Operated	29.0%	54.0%	30.0%

NOTE: From U.S. Department of Interior, Bureau of Mines.

COMMODITY PRICES

	March, 1944	March, 1943	Feb., 1944
Wholesale Prices:			
U.S. Bureau of Labor Statistics (1926=100%)	103.8	103.5	103.6
Farm Prices:			
U.S. Bureau of Labor Statistics (1926=100%)	123.6	122.8	121.8
Retail Prices:			
Food (U.S. Bureau of Labor Statistics (1935-1939=100%)	134.7	137.4	134.8*
Cost of Living Index (1935-1939=100%)	123.8	122.8	124.2*
Department Stores (Fairchild's Publications January, 1931=100%)	113.4	113.1	113.3

*Revised.

SHIPMENTS OF LIVE STOCK CONVERTED TO A RAIL-CAR BASIS*

	Cattle		Calves		Swine		Sheep		Total	
	1944	1943	1944	1943	1944	1943	1944	1943	1944	1943
Total Interstate Plus Fort Worth	2,908	6,624	454	741	1,815	1,563	284	713	5,461	9,641
Total Intrastate Omitting Fort Worth	526	807	127	232	127	63	44	23	824	1,125
TOTAL SHIPMENTS	3,434	7,431	581	973	1,942	1,626	328	736	6,285	10,766

TEXAS CAR-LOT* SHIPMENTS OF LIVE STOCK FOR YEAR TO DATE

	Cattle		Calves		Swine		Sheep		Total	
	1944	1943	1944	1943	1944	1943	1944	1943	1944	1943
Total Interstate Plus Fort Worth	7,969	14,184	1,750	2,018	4,703	3,991	826	2,045	15,248	22,238
Total Intrastate Omitting Fort Worth	1,581	2,471	365	608	317	213	145	169	2,408	3,461
TOTAL SHIPMENTS	9,550	16,655	2,115	2,626	5,020	4,204	971	2,214	17,656	25,699

*Rail-car Basis: Cattle, 30 head per car; calves, 60; swine, 80; and sheep, 250.

Fort Worth shipments are combined with interstate forwardings in order that the bulk of market disappearance for the month may be shown.

NOTE: These data are furnished the United States Bureau of Agricultural Economics by railway officials through more than 1,500 station agents, representing every livestock shipping point in the state. The data are compiled by the Bureau of Business Research.

DAIRY PRODUCTS MANUFACTURED IN PLANTS IN TEXAS

Product and Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
CREAMERY BUTTER (1000 lb.)													
1944*	2,043	2,126	2,765										
1943*	2,636	2,743	3,076	3,446	4,740	4,275	4,051	3,452	2,629	2,581	2,236	1,924	38,071
1930–39 average	2,074	2,109	2,392	3,138	3,556	3,166	4,113	2,867	2,513	2,608	2,301	2,211	32,048
ICE CREAM (1000 gal.)‡													
1944*	1,115	1,211	1,520										
1943*	1,125	1,187	1,396	1,823	2,327	2,391	2,758	2,763	1,990	1,662	1,443	940	22,237
1930–39 average	215	262	434	570	752	893	904	845	686	460	259	205	6,486
AMERICAN CHEESE (1000 lb.)													
1944*	902	956	1,229										
1943*	914	948	1,063	1,633	2,120	1,943	1,896	1,405	1,019	819	621	809	15,272
1930–39 average	554	590	737	1,050	1,215	1,129	1,119	1,025	866	852	718	641	10,496
MILK EQUIVALENT OF DAIRY PRODUCTS† (1000 lb.)													
1944*	67,873	71,519	92,663										
1943*	80,106	83,301	94,470	115,788	154,491	142,700	143,120	124,558	93,186	85,084	73,290	62,253	1,271,809
1930–39 average	54,675	57,139	67,456	89,641	104,323	97,562	97,075	89,185	76,165	73,444	60,119	55,872	922,656

*Estimates of production made by the Bureau of Business Research.
†Milk Equivalent of Dairy products was calculated from production data by the Bureau of Business Research.
‡Includes ice cream, sherbets, ices, etc.
NOTE: 10-year average production on creamery butter, ice cream and American cheese based on data from the Agricultural Marketing Service, U.S.D.A.

MARCH, 1944, CARLOAD MOVEMENTS OF POULTRY AND EGGS

Shipments from Texas Stations

*Destination	Cars of Poultry: Chickens		Cars of Poultry: Turkeys		Cars of Eggs: Shell		Cars of Eggs: Frozen		Cars of Eggs: Dried		Shell Equivalent†	
	1944	1943	1944	1943	1944	1943	1944	1943	1944	1943	1944	1943
TOTAL	5	6	7	1	37	37	173	76	35	72	663	765
Intrastate	0	1	3	0	27	31	53	51	8	4	197	165
Interstate	5	5	4	1	10	6	120	25	27	68	466	600

Receipts at Texas Stations

TOTAL	7	0	2	0	27	36	60	37	1	2	155	126
Intrastate	0	0	2	0	16	25	46	37	0	2	108	115
Interstate	7	0	0	0	11	11	14	0	1	0	47	11

*The destination above is the first destination as shown by the original waybill. Changes in destination brought about by diversion factors are not shown.
†Dried eggs and frozen eggs are converted to a shell egg equivalent on the following basis: 1 rail carload of dried eggs=8 carloads of shell eggs, and 1 carload of frozen eggs=2 carloads of shell eggs.
NOTE: These data furnished to the Division of Agricultural Statistics, B. A. E., by railroad officials through agents at all stations which originate and receive carload shipments of poultry and eggs. The data are compiled by the Bureau of Business Research.

PERCENTAGE CHANGES IN CONSUMPTION OF ELECTRIC POWER

	March, 1944 from March, 1943	March, 1944 from Feb., 1944	Year, 1944 from Year, 1943
Commercial	+15.0	− 3.3	+ 6.0
Industrial	+24.3	+ 4.2	+21.0
Residential	+21.4	− 2.7	+12.8
All Others	+10.7	+ 3.4	+19.9
TOTAL	+18.9	+ 1.9	+17.0

Prepared from reports of 9 electric power companies to the Bureau of Business Research.

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